

## ***CHAPTER 2.0    ALTERNATIVES CONSIDERED***

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This chapter presents a summary of the process that was used to formulate, evaluate, screen and refine the NEPA alternatives. It includes a general description of the eleven initial alternatives, the five alternatives selected for final screening, and a detailed description of the two alternatives advanced for detailed study in this EIS.

### **Selection of a Preferred Alternative**

As a result of the screening process detailed below, the DEIS presented two alternatives for consideration. These were Alternative 1: No Build, and Alternative 4: I-15 Widening and Reconstruction. Alternative 4 included four options in the Provo/Orem area and three options for the American Fork Main Street Interchange reconstruction. Different combinations of these design options effectively provide a maximum of 12 alternatives for consideration.

After careful review of the alternatives, their impacts, and comments received during the public comment period, the Joint Lead Agencies have selected Alternative 4, with American Fork Option C and Provo/Orem Option D as their Preferred Alternative. The options selected for the Preferred Alternative have been refined slightly since the DEIS. These changes are described in section 2.2. Below, the two preferred options are highlighted for easy comparison with other alternatives. Section 2.6 provides a summary of the Preferred Alternative, and Chapter 3 discloses environmental impacts of all alternatives and options carried through the DEIS.

### **Commuter Rail Component of Alternative 4**

As previously described in Section 1.1, it was initially contemplated that this EIS would serve as a decision document for both the transit component and the highway component of the solution to projected congestion on the I-15 corridor; therefore, the formulation and screening of alternatives included major transit and highway elements. Based on this approach, it was determined that two alternatives -- the No Build Alternative, and a build alternative which included commuter rail and I-15 reconstruction -- would be carried forward for detailed analysis. Shortly thereafter, Utah voters approved commuter rail as a locally funded UTA project and a decision was made by FHWA, UDOT and UTA that it was no longer necessary or appropriate for commuter rail to be considered as a proposed action or build alternative in the I-15 Corridor EIS. Instead, UTA studied commuter rail in an environmental disclosure document prepared pursuant to UTA policy, which was completed in October 2007. The Decision Document was signed in January of 2008. Construction of commuter rail in Utah and Salt Lake counties is scheduled to begin in 2008.

In light of these events, FHWA and UDOT reviewed the purpose and need and the assembly and screening of alternatives and determined that the screening process and resulting alternatives remained valid and appropriate. It was concluded that no different alternatives would have been assembled or carried forward had commuter rail been included in the No Build alternative from the inception of the study process. The only required change was to remove commuter rail as a component of the carried-forward build alternative, and incorporate it into the No Build Alternative, which includes all existing, approved and planned transportation improvement projects through 2030. This left I-15 widening and reconstruction, with potential alternative configurations at several points along the corridor, as the primary component of the build alternative (Alternative 4) that was carried forward for detailed study in this EIS.

Based on the above, it was concluded that this EIS should describe the alternatives evaluation and screening process as it was conducted, including the part of the process that preceded commuter rail's transition to a locally funded UTA project.

## **2.1    Alternatives Development and Screening**

The alternatives development and screening process for this project was extensive and included numerous ideas from resource agencies and the public, as well as coordination with the MPOs, city staff, UDOT management, FHWA, and other stakeholders. Over a two-year period, the alternatives development and screening process evaluated a full range of alternatives and advanced two for detailed study. An Alternatives Screening Technical

Report<sup>1</sup> documents the screening process in detail and is available upon request. Figure 2-1 provides an overview of this process.

### ***2.1.1 Evaluation Criteria and Definitions***

The criteria that were used to assemble and evaluate alternatives were based on the primary purpose and need and on other secondary purposes and objectives as summarized in Chapter 1. If an alternative did not satisfy a primary purpose and need criterion, it was screened out. While alternatives were only screened out based on primary criteria, inconsistency with secondary criteria was also noted and considered as additional reasons in support of screening. Secondary screening criteria were not definitive in eliminating an alternative, but added to, or subtracted from, the merits of an alternative. The evaluation criteria are briefly described below.

#### **2.1.1.1 Evaluation Criteria**

##### **Primary Criteria**

- **Relieve I-15 Corridor Congestion:** For purposes of screening, two objective evaluation measures were adopted to assess an alternative's consistency with the primary purpose and need of relieving unacceptable 2030 congestion in the I-15 corridor. The first measure included the 2030 forecast peak hour volume-to-capacity ratio (V/C) at five east-west screenlines located along the study corridor (see Figure 2-2). At each of the screenline locations, the V/C was assessed for mainline I-15 and for major north-south arterials. A V/C above 1.0 was considered an indicator of excessive congestion. The second measure was the 2030 forecast peak-hour level-of-service (LOS) on mainline I-15, at the same screenline locations. An LOS of E or F along the screenline was considered an indicator of excess congestion. For purposes of comparing the alternatives and options that were carried forward for detailed evaluation, refined congestion evaluation criteria were applied. These criteria are the LOS on mainline I-15 and interchange components (including ramps, ramp termini intersections and intersections adjacent to ramp termini), and surface street delay in the Provo/Orem area.
- **Transit Improvements Cost Effectiveness:** For each major transit improvement scenario under consideration, an assessment of cost effectiveness was made, based on an estimate of the following factors: capital cost, operating cost, maintenance cost, and annual incremental cost per rider. This allowed a cost effectiveness comparison among the alternative transit scenarios. This criterion was only applied as a screening criterion after the initial screening.

##### **Secondary Criteria**

- **Improve Regional and Intra-County Movement of People and Goods:** To assess an alternative's consistency with the purpose of improving regional mobility, which for this EIS was defined as a transit-focused purpose, two objective measures were developed. The first was the 2030 forecast of daily transit trips between and within defined subareas within the study area. The second was the 2030 forecast of additional daily transit trips that would be taken within the study area utilizing a potential new transit facility. This allowed a comparison among the alternative transit scenarios.
- **Environmental Issues of Concern:** For purposes of screening, a general assessment of likely impact to major areas of environmental concern was considered for each alternative. This was subdivided into two evaluation sub-criteria: the built environment (likely impacts on existing homes, businesses, etc.) and the natural environment (likely impacts on significant wetland and wildlife resources, etc.). The appropriate

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<sup>1</sup> A copy of the Alternatives Screening Technical Report may be viewed at the FHWA Utah Division office upon written request.

resource specialists assigned a level of “minor,” “minor to moderate,” “moderate,” “moderate to major,” or “major” to each alternative, allowing a general comparison. For purposes of comparing the alternatives and options that were carried forward for detailed evaluation, a more detailed assessment of impacts to environmental resources was performed, and is discussed in Chapter 3 of this EIS.

- **Compatibility with Local and Regional Plans:** Alternatives were assessed in terms of (1) whether the project or component under consideration is included in the applicable regional transportation plans (i.e., WFRC and MAG 2030 Regional Transportation Plans), and (2) whether the project or component was compatible with land use and transportation plans adopted by local governments (i.e., cities and counties along the study area corridor). With respect to the transportation plans, a characterization of “included,” “partially included” or “not included” was assigned to each alternative. For local plans, a characterization of “compatible,” “somewhat compatible” or “not compatible” was considered. Compliance with local and regional plans was not definitive in eliminating an alternative, but added to, or subtracted from, the merits of an alternative.
- **Safety and Design Improvements:** Alternatives were assessed for whether they would address the substandard roadway segments, ramps, and bridges that have been identified along the I-15 corridor in the study area. Alternatives were assigned either a “yes” or “no” for three different elements (improvements to bridge structures, traffic operation improvements, and safety improvements).

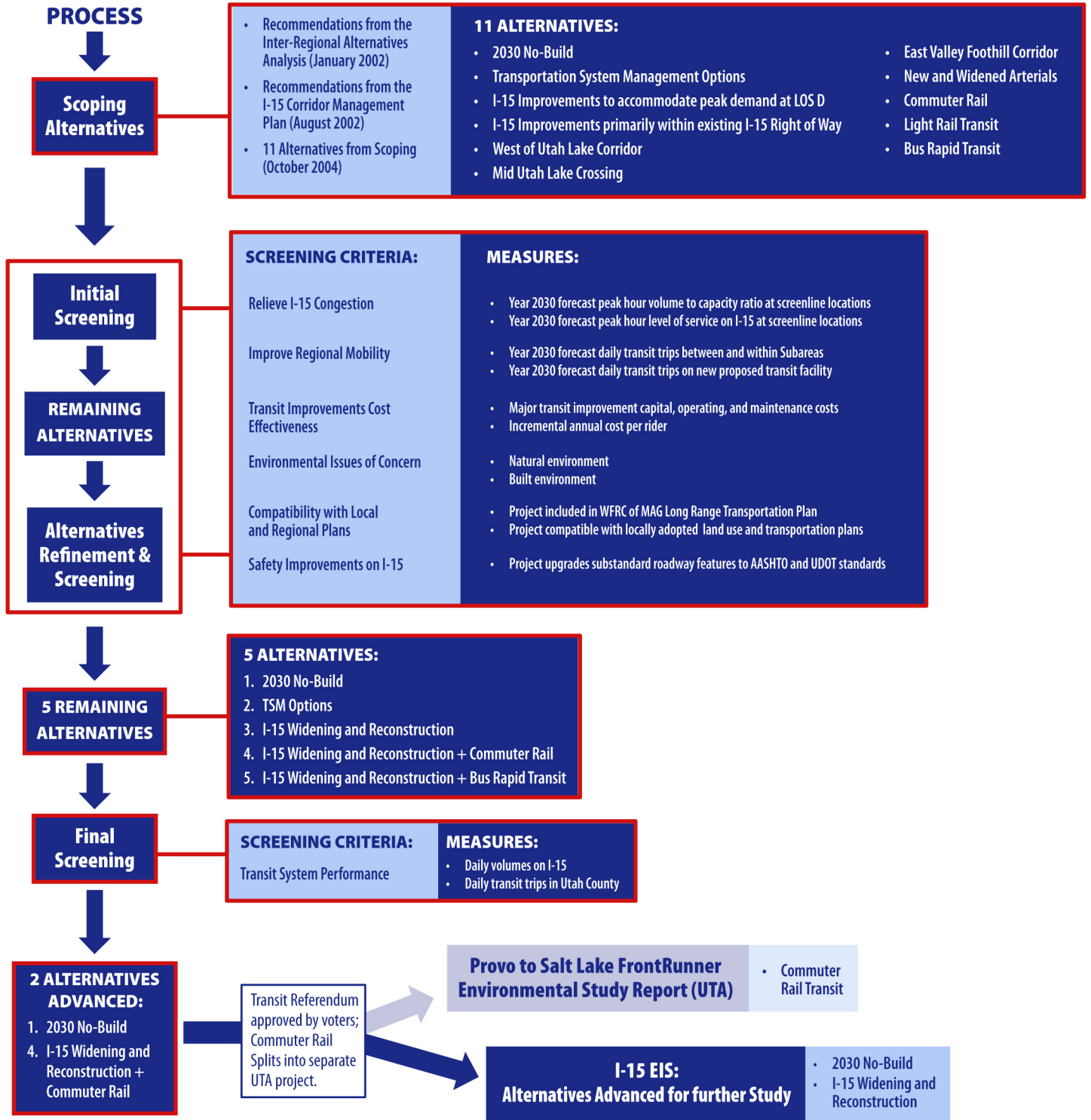
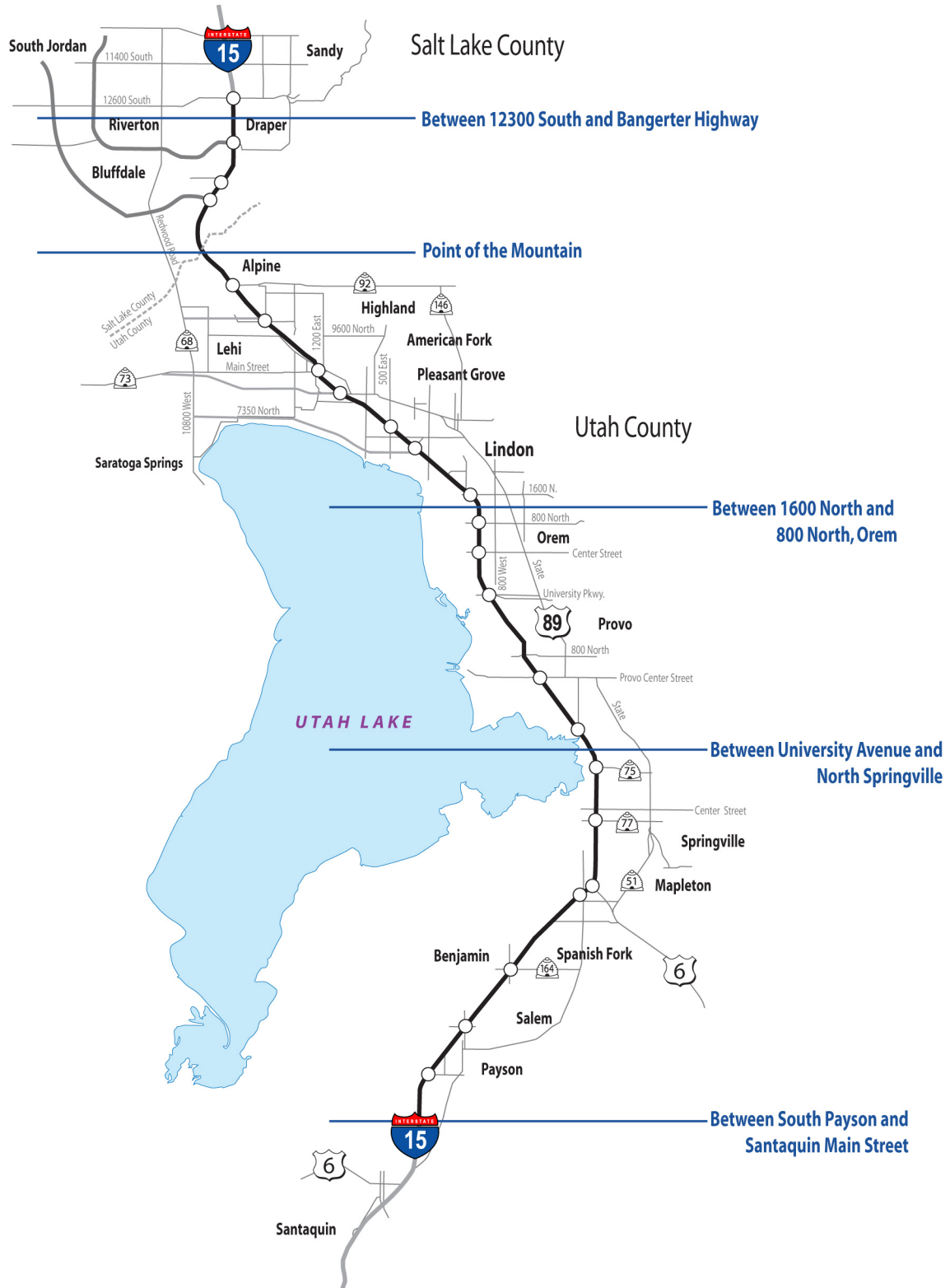


Figure 2-1  
Schematic of Alternatives Development and Screening

# I-15 CORRIDOR EIS | UTAH COUNTY - SALT LAKE COUNTY



Scale in Miles  
0 1 2 3 4 5

Figure 2-2  
Screenline Locations

I-15 Interchanges  
inside Study Corridor

I-15 Mainline inside  
Study Corridor



### 2.1.1.2 Definitions

As a result of the ideas generated by the scoping process, several initial transit technologies and highway operations concepts were defined, as described below. These concepts were subsequently incorporated into the alternatives development process.

#### Transportation Systems Management (TSM)

TSM concepts consist of a variety of low-cost methods and technologies used to mitigate traffic congestion. TSM also includes Transportation Demand Management (TDM), and Intelligent Transportation Systems (ITS).

TSM measures include lower-cost strategies, such as intersection and roadway improvements, managed lanes, access management, ramp metering, auxiliary lanes, and incident management/transit service improvements. The components of TDM include ridesharing, staggered and flexible work hours, telecommuting, parking management, and trip reduction ordinances. ITS uses more technological approaches, including traffic operation centers, signal system improvements and coordination, transit signal priority, variable message displays, and vehicular and transit passenger information systems.

#### Express Lanes

Express lanes include both high occupancy vehicles (HOV) (2+ persons) and single occupant vehicles that are willing to pay a fee to use the excess capacity. I-15 currently has express lanes that extend from Orem University Parkway on the south to 400 North in Salt Lake City. The existing express lanes are separated from the general purpose travel lanes by pavement striping and are typically located in the far left lane of I-15. Early in the alternatives development phase of this process these were referred to as HOV lanes.

#### Light Rail Transit (LRT)

LRT is a system of electric-powered rail transit that uses light transit vehicles operating singly or in up to four-car trains on fixed rails. The right-of-way may or may not be separated from other traffic. LRT can reach top speeds of about 55 miles per hour. UTA has been operating LRT service, known as TRAX, in the Salt Lake City area since December 1999. Existing TRAX service is provided on two lines: the Sandy/Salt Lake Line from the Sandy Civic Center north to the Energy Solutions Arena, and the University Line from the Energy Solutions Arena east to the University of Utah Medical Center.

#### Bus Rapid Transit (BRT)

BRT is essentially "light rail transit on rubber tires." The type of vehicle anticipated for use would be express buses similar to what currently operates in the existing express lane. Initially, the following four types of BRT configurations were identified for consideration as part of the I-15 corridor alternatives:

- Additions to the Existing Bus Service
- Dedicated Lane for Buses
- Physically Separate Bus Lane on Arterial
- Grade-Separated/Non-General Purpose Lane for Buses

#### Commuter Rail Transit (CRT)

CRT technology would use diesel locomotives and two-level passenger coaches to carry passengers. CRT stations would be spaced farther apart than those serving LRT. The frequency of service for CRT would be less than that of an LRT service, with service concentrated during the morning and evening peak hours. CRT would be built to standards comparable to those of freight trains and operate on the same or adjacent right-of-way to that of freight and inter-city trains.

#### Diesel Multiple Unit (DMU)

DMU is a self-propelled commuter railcar that operates similarly to LRT. It is an alternative to locomotive-hauled passenger trains because railcars can be combined to form short trains. It can also start and stop in shorter distances and operate on sharper horizontal curves than CRT. DMUs are a fairly new transit technology and are not commonly used in the United States.

### ***2.1.2 Initial Formulation and Screening of Alternatives***

Based on public and agency input, eleven initial conceptual alternatives (10 build alternatives and the No Build) were assembled to provide and assess a range of approaches to potentially address the purpose and need. A brief description of each initial conceptual alternative, and its reason for being considered, is provided below.

#### **M1: TSM Alternative**

This alternative would include transportation systems management (TSM) strategies, transportation demand management (TDM) strategies, and intelligent transportation systems (ITS). A key component of this alternative would be that it would utilize the No Build lane configuration. Examples of the types of items included in this alternative include the following:

##### **TSM Strategies:**

- Low cost intersection/roadway improvements
- Reversible lanes
- Access management
- Incident management
- Transit service improvements

##### **TDM Strategies:**

- Rideshare promotion
- Staggered and flexible work hours
- Telecommuting
- Parking management
- Trip reduction ordinances

##### **ITS Strategies:**

- Traffic operation center
- Signal improvement/coordination
- Transit signal priority
- Variable message signs
- Transit passenger information

#### **H1: I-15 Improvements, LOS D and Expanded ROW**

This alternative would entail rebuilding of I-15 the entire length of the study area to the degree necessary to meet LOS D or better for purposes of the 2030 peak hour. The improvements necessary to achieve LOS D were initially assumed to require expansion of the existing ROW at numerous locations along the corridor; however, this assumption was later determined to be incorrect. Travel modeling indicated that to achieve LOS D throughout all or most of the study area, I-15 would need to be widened as follows (see Figures 2-3 and 2-4):

- From South Santaquin to North Payson, widened from 4 to 6 lanes
- From North Payson to US-6 interchange, widened from 4 to 8 lanes
- From US-6 interchange to University Avenue in Provo, widened from 6 to 10 lanes
- From University Avenue to Alpine, widened from 6-8 lanes to 12 lanes
- From Alpine to Proposed Porter Rockwell Interchange<sup>2</sup>, widened from 8 to 14 lanes
- From Proposed Porter Rockwell Interchange to Bangerter Hwy, widened from 8-9 lanes to 12 lanes
- From Bangerter Hwy to 12300 South, widened from 10 to 12 lanes

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<sup>2</sup> Addressed in the Mountain View Corridor EIS.

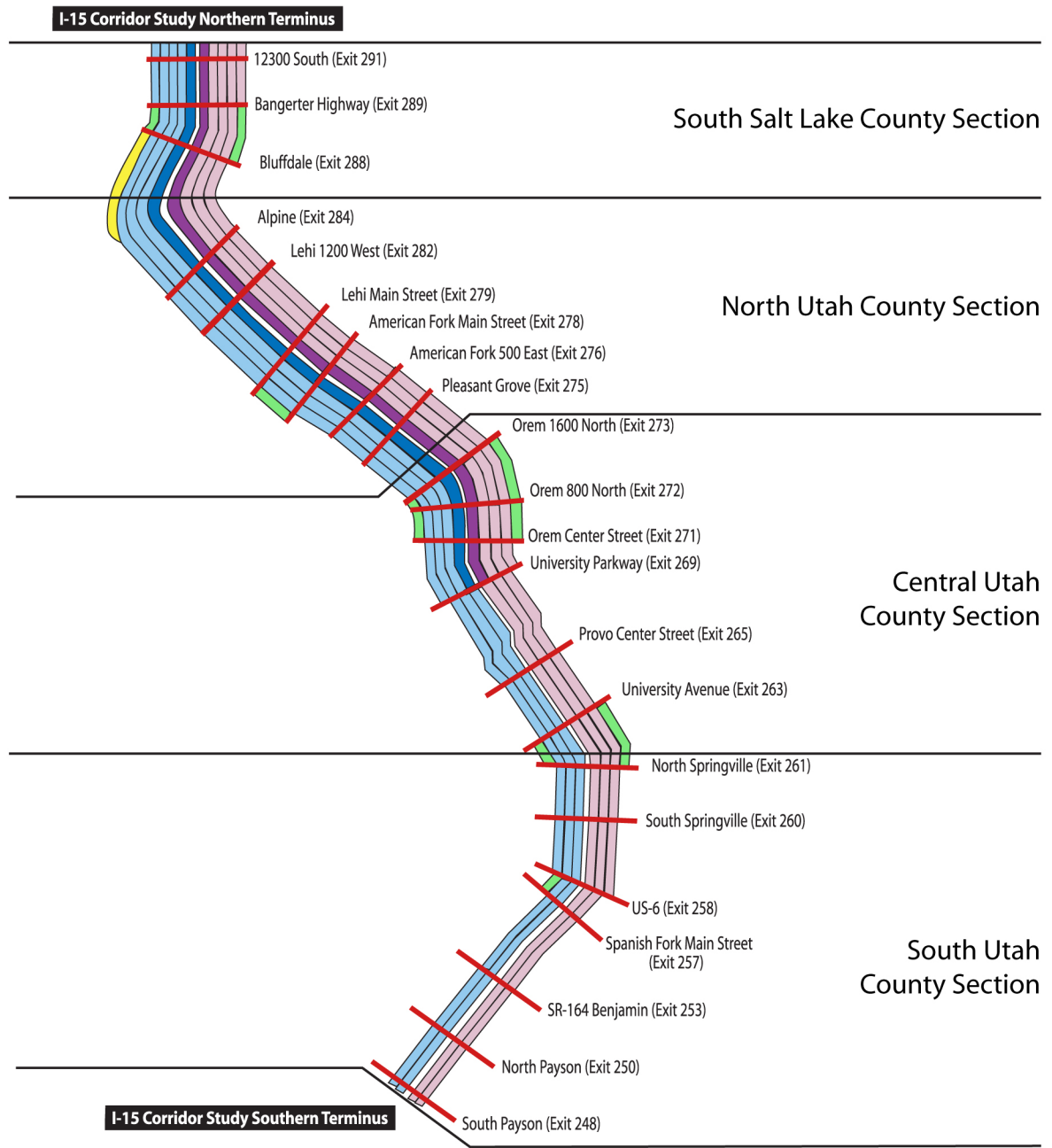


Figure 2-3  
Existing I-15 Corridor Roadway Configuration/Number of Lanes

## LEGEND

 Southbound General Purpose Lane	 Southbound Express Lane	 Climbing Lane
 Northbound General Purpose Lane	 Northbound Express Lane	 Auxilliary Lane



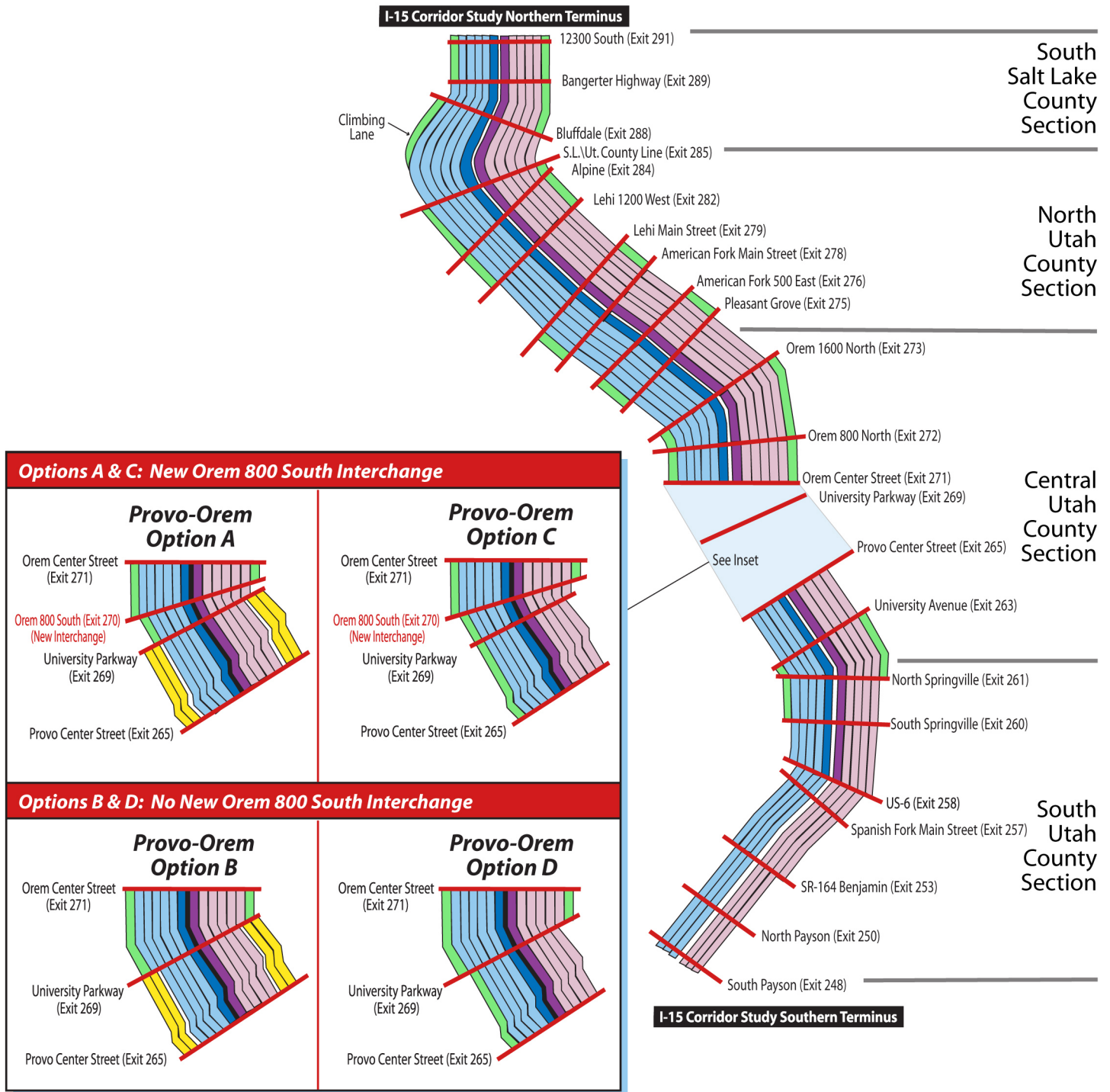


Figure 2-4  
Proposed I-15 Lane Configuration

## **H2: I-15 Improvements, Primarily Within Existing ROW**

This alternative would entail rebuilding I-15 through most of the study area, but the improvements would be confined to within the existing ROW corridor in an effort to reduce cost and impact to the built and natural environment. Confinement to the existing ROW would limit the number of new lanes through much of the corridor. In general, the resulting lane configuration would be:

- From South Santaquin to North Payson, widened from 4 to 6 lanes
- From North Payson to US-6 interchange, widened from 4 to 8 lanes
- From US-6 interchange to 12300 South, widened from 6-8 lanes to 10 lanes

## **H3: New Highway West of Utah Lake**

This alternative would entail building a new four-lane limited-access highway that would continue south from the southern end of the proposed Mountain View Corridor, on the west side of Utah Lake (see Figure 2-5). The new highway would generally follow Redwood Road (SR-68) south to where it meets US-6 southwest of the lake, and then follow US-6 east to its intersection with I-15. This alternative was designed to assess whether it might be possible to relieve congestion on the I-15 Corridor to an acceptable level by essentially developing a parallel new corridor to the west.

## **H4: New Mid-Utah Lake Crossing**

This alternative would entail building a new four-lane limited-access highway that would continue south from the southern end of the proposed Mountain View Corridor, on the west side of Utah Lake, in the same manner as the West Utah Lake alternative, but would then turn east near Pelican Point on the west side of the lake (see Figure 2-5). From Pelican Point, the new highway would head east, across Utah Lake on a new causeway or bridge, and then overland to rejoin existing I-15 at approximately 800 South/University Parkway in Orem. Like the West Utah Lake alternative, this alternative was designed to assess whether it might be possible to relieve congestion on the I-15 Corridor to an acceptable level by essentially developing a parallel new corridor to the west, but shortening the new corridor to approximately coincide with what is projected to be the most congested stretch of the I-15 Corridor.

## **H5: East Valley Foothill Corridor**

This alternative would entail building a new four-lane limited-access highway that would start at the southern terminus of Wasatch Boulevard in Draper (south Salt Lake County), and head south through the South Mountain area and the east bench in Utah County, and then turn west and connect with US-189 (University Avenue) in Provo (see Figure 2-5). This alternative was designed to assess whether it might be possible to relieve congestion on the I-15 Corridor to an acceptable level by essentially developing a parallel new corridor to the east.

## **H6: New and Widened Arterials**

This alternative (see Figure 2-5) was designed to assess whether it might be possible to relieve congestion on the I-15 Corridor to an acceptable level through new and improved north-south arterials at locations already targeted for development by the MAG Regional Transportation Plan. Table 2-1 shows the elements of this alternative.

Table 2-1: New and Widened Arterials

Roadway	Existing Number of Lanes	Proposed MAG Regional Transportation Plan Number of Lanes*	Proposed Number of Lanes*
US-89 (State Street)	4-6 Lanes	6 lanes	8 lanes
SR-114 (Geneva Road)	2 lanes	4 lanes	6 lanes
SR-265 (University Parkway)	4-6 lanes	6 lanes	8 lanes
US-189 (University Avenue)	4 lanes	6 lanes	8 lanes
SR-68 (Redwood Road)	2 lanes	4 lanes	6 lanes
East Lake Corridor	N/A	N/A	4 lanes
South County Belt Route	N/A	N/A	4 lanes

\* Both directions. Does not include turn lanes.

#### T1: Commuter Rail Transit (CRT) on UTA ROW

This alternative would entail construction of a heavy rail, diesel engine commuter rail system from Salt Lake County to Springville (a subset of the overall Ogden to Springville commuter rail system), located within UTA's existing ROW generally located west of I-15, through the study area (see Figure 2-5). This alternative was designed to assess the effectiveness of relieving I-15 congestion through the addition of a significant new mass transit project, and to allow a comparison among other potential mass transit modes.

#### T2: Light Rail Transit (LRT) as Extension of Trax System

This alternative would consist of extending the existing UTA light rail TRAX system (see Figure 2-5). The TRAX extension would begin at the existing Sandy Station at 10000 South in Salt Lake County, and extend south to a new Orem Intermodal Center located near the University Parkway Interchange. The TRAX extension would utilize UTA's existing ROW from Sandy south to Lindon, and then would require a new ROW obtained from the Union Pacific Railroad from Lindon south, through Vineyard and then to the new Intermodal Center. This alternative allows a comparison of LRT to CRT as the primary mass transit component in the I-15 Corridor.

#### T3: Bus Rapid Transit (BRT)

This alternative would consist of a new bus rapid transit service running between Salt Lake City and Sandy on the north, to Provo on the south (see Figure 2-5). This system would utilize I-15 express lanes from Salt Lake City and Sandy south to Alpine (intersection with SR-92), where it would transition to a new dedicated road using UTA's existing ROW on the east side of I-15, and then follow State Street to the intersection with University Parkway. This alternative allows a comparison of BRT with CRT and LRT as the primary mass transit component in the I-15 corridor.

#### NB: No Build

The No Build Alternative consisted of the following elements: all highway and transit projects identified in the MAG Utah Valley 2030 Regional Transportation Plan without I-15 widening and reconstruction; all highway and transit projects identified in the 2030 Wasatch Front Regional Transportation Plan without I-15 widening and reconstruction; Mountain View Corridor; and on-going routine I-15 pavement and bridge preservation projects.

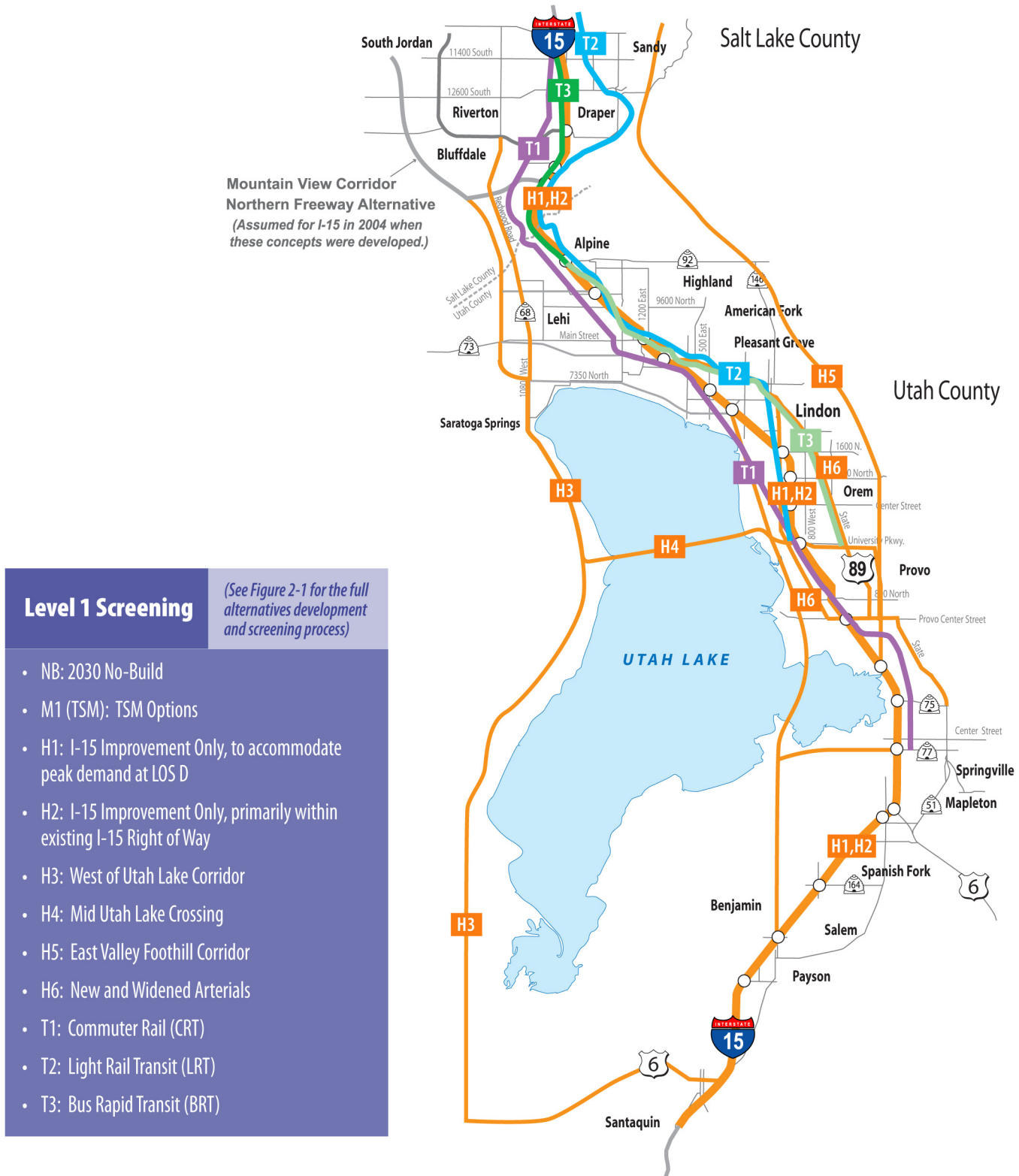


Figure 2-5  
Initial Alternatives

Proposed Roadway Improvements or New Roadways (H1-H6)

I-15 Interchanges inside Study Corridor

Proposed Commuter Rail (T1)

Proposed Light Rail Transit (T2)

Proposed Bus Rapid Transit - On I-15 Express Lanes (T3)

Proposed Bus Rapid Transit - New Construction (T3)

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#### 2.1.2.1 Alternatives Eliminated from Further Consideration

A screening workshop to consider the initial alternatives was held on February 10, 2005. Representatives from the following agencies were invited to participate: Federal Highway Administration, Utah Department of Transportation, Federal Transit Administration, Utah Transit Authority, U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, U.S. Department of Interior, Utah Department of Natural Resources, Utah Department of Water Quality, Utah Division of Forestry, Fire and State Lands, Utah Division of Parks and Recreation, Utah Division of Wildlife Resources, Utah State Historic Preservation Office, Governor's Office of Resource Development, and the Department of Natural Resources. Environmental issues of concern were considered at a corridor level based on professional judgment and input from resource agencies.

As a result of the initial screening, several alternatives were eliminated from further consideration for the following reasons:

- I-15 Improvements within Existing I-15 Right-of-Way
  - Analysis showed that screenline V/C exceeded 1.0 and/or LOS on I-15 was E or F
- New and Widened Arterials from the MAG Regional Transportation Plan
  - Analysis showed that screenline V/C exceeded 1.0 and/or LOS on I-15 was E or F. This alternative was not advanced as a stand-alone option.
- New Highway West of Utah Lake
  - Analysis showed that screenline V/C exceeded 1.0 and/or LOS on I-15 was E or F
  - Resource agencies expressed concerns with impacts to wetlands, wildlife, and induced growth.
- Mid-Utah Lake Crossing
  - Analysis showed that screenline V/C exceeded 1.0 and/or LOS on I-15 was E or F
  - Resource agencies expressed concerns with impacts to wetlands, wildlife, and induced growth.
- East Valley Foothill Corridor
  - Analysis showed that screenline V/C exceeded 1.0 and/or LOS on I-15 was E or F
  - Disruption to the built environment
- All Stand-Alone Transit (BRT, CRT, LRT)
  - Analysis showed that screenline V/C exceeded 1.0 and/or LOS on I-15 was E or F. These alternatives were not advanced as stand-alone options but were incorporated into other alternatives.

#### 2.1.3 Alternatives Refinement and Screening (April 2005 – July 2005)

From the results of the initial screening, packages of multi-modal alternatives were defined that provided the highest likelihood of meeting the project purpose and need. The packaged alternatives are combinations of I-15 improvements, transportation management options, CRT, LRT, and BRT. During this screening and evaluation process, combinations including DMU were also evaluated and compared to LRT. Additional technical analyses and travel demand forecasting were conducted to provide a basis to evaluate these alternatives. Highway and transit combinations were modeled using the current WFRC/MAG regional model. The models evaluated both the function of the I-15 mainline and transit ridership.

Three screening workshops were held between April and July 2005. The same agencies invited to the initial screening were also invited to participate in these screenings. Environmental issues were considered at the corridor level based on professional judgment and input from resource agencies. An *Alternatives Development and Screening Technical Data* report was produced (FHWA 2007), and is available at the FHWA division office.

##### 2.1.3.1 Alternatives Eliminated from Further Consideration

As a result of the alternatives refinement and screening, the following alternatives were eliminated from further consideration for the reasons provided:

- All Packaged Alternatives that included LRT
  - High capital cost, transit operating cost, and incremental cost per new rider
- All Packaged Alternatives that included DMU
  - High capital cost, transit operating cost, and incremental cost per new rider

#### 2.1.3.2 Alternatives Carried Forward

Based on the results of the alternatives refinement and screening, five alternatives were selected for further evaluation. These alternatives were renamed for the final screening and are as follows:

- Alternative 1: No Build
- Alternative 2: Transportation Systems Management (TSM)
- Alternative 3: I-15 Widening and Reconstruction
- Alternative 4: I-15 Widening and Reconstruction, plus CRT
- Alternative 5: I-15 Widening and Reconstruction, plus BRT

##### Alternative 1: No Build

The No Build Alternative consisted of the following elements:

- All highway and transit projects identified in the MAG Utah Valley 2030 Regional Transportation Plan (2005 adopted version) without I-15 widening and reconstruction
- All highway and transit projects identified in the Wasatch Front Urban Area Regional Transportation Plan Update: 2004-2030 without I-15 widening and reconstruction
- Mountain View Corridor
- Ongoing routine I-15 pavement and bridge preservation projects

##### Alternative 2: Transportation System Management (TSM)

In addition to the No Build improvements to the transportation system, this alternative includes the TSM, TDM, and ITS components listed below.

TSM includes strategies to improve the operating efficiency of the highway and transit systems, such as “low cost” intersection/roadway improvements; managed lanes; access management; incident management; and transit service improvements. The following elements are included in the TSM Alternative:

- Increase Express Bus in Express Lanes (Double by 2030)
- Additional Park-and-Ride Lots
- Bus Prioritization (Ramp Queue Jumping)
- Improved Feeder Service
- Higher Capacity Bus
- 3+ Persons in Express Lane
- Low Cost Roadway Improvements/Intersections
- Reversible Lanes
- Access Management
- Incident Management
- Add Northbound Climbing Lane at Point of the Mountain
- Ramp Metering
- Minor Interchange Improvements
- Auxiliary Lanes
  - SR-75 / SR-77 Both Directions

- University Avenue / SR-75 (Existing)
- Provo Center/University Avenue Both Directions
- American Fork 500 East / Pleasant Grove Both Directions
- Lehi Main / American Fork Main Both Directions
- Lehi 1200 West / SR-92
- Possible Lower Bus Fares
- Express Lane to Payson

TDM includes strategies to reduce vehicular demand during peak travel times, including rideshare promotion; staggered and flexible work hours; telecommuting; parking management; trip reduction ordinances; and media campaigns.

ITS is the application of advance technologies to improve the efficiency and safety of transportation systems. Specific elements include a traffic operation center; signal system improvement/coordination; transit signal priority; variable message signs; and transit passenger information systems.

Travel demand modeling was performed to assess the performance of this alternative. To evaluate the effectiveness of this alternative, modeling assumed transit and freeway auxiliary lane improvements and a 5% increase in capacity and free flow speed on key corridors, which would be achieved by using a combination of the above strategies. The corridors and limits for which the capacity and free-flow speed were increased are as follows:

- Redwood Road (SR-68) – SR-73 to Bangerter Highway
- State Street (US-89) – US-6 to American Fork 100 East (SR-74)
- University Avenue (US-189) – I-15 to Orem 800 North (SR-52)
- Orem 800 North (SR-52) – State Street (US-89) to University Avenue (US-189)
- Geneva Road (SR-114) – University Parkway (SR-265) to State Street (US-89)
- University Parkway (SR-265) – State Street (US-89) to University Avenue (US-189)

### **Alternative 3: I-15 Widening and Reconstruction**

Alternative 3 would include widening and reconstruction of the existing I-15 facility. The improvements would involve the following:

- Addition of general purpose lanes
- Extension of express lanes to US-6 in Spanish Fork
- Construction of two new interchanges (Orem 800 South and North Lehi). Three interchange options are being considered at American Fork Main Street
- Addition of a frontage road system in the Provo/Orem area. Four options were considered, two with frontage roads (Options A and B).
- Reconstruction of interchanges
- Improvements to bridges that cross the roadway
- Improvements to connecting arterial streets

### **Alternative 4: I-15 Widening and Reconstruction, plus CRT**

Alternative 4 would include I-15 improvements included as part of Alternative 3 plus CRT from the Salt Lake City Intermodal Center to South Provo.

Proposed CRT station locations are as follows:

- Provo Intermodal Center (near University Avenue in East Bay)
- Orem Intermodal Center (University Parkway)

- Vineyard (at the old Geneva Steel site)
- American Fork Main Street
- Thanksgiving Point in Lehi
- Bangerter Highway in Bluffdale
- 10200 South in Sandy
- 5300 South in Murray
- Salt Lake City Intermodal Center (200 South 600 West)

CRT was modeled using 20-minute headways (timeframe between buses or trains) during peak periods and 40-minute headways during off-peak periods.

UTA's current plan for an operating schedule has trains running every 15 minutes during the AM and PM peak hours (in peak direction), every 30 minutes during off-peak hours during the day, and every 60 minutes during the evening hours between 7 PM and 11 PM, with hourly Saturday service.

#### **Alternative 5: I-15 Widening and Reconstruction, plus BRT**

Alternative 5 would include I-15 improvements included as part of Alternative 3 plus BRT from the Salt Lake Intermodal Center to South Provo. The BRT system would not be separated from I-15 but would operate in the Express Lane.

BRT was modeled using 20-minute headways during peak periods and 40-minute headways during off-peak periods. Three separate routes were modeled: one each for south, central, and north Utah County. Each route was modeled to serve three or four stations and then travel directly to downtown Salt Lake City.

### ***2.1.4 Final Alternatives Screening***

Following the identification of these five alternatives, the referendum described in Chapter 1 passed, effectively advancing commuter rail as a locally approved and funded transit component. Based on this referendum UTA, FHWA and UDOT agreed to separate commuter rail from the I-15 EIS (see Appendix A). Subsequently, these agencies held a series of meetings to consider the final screening of alternatives, and the effect of the commuter rail referendum on alternatives advancement. The results of the screening are described below.

#### **2.1.4.1 Alternatives Eliminated from Further Consideration**

As a result of the alternatives refinement and screening, including the above referenced meetings, the following alternatives were eliminated from further consideration:

- **Alternative 2 – TSM**  
This alternative had V/C ratios in excess of 1.0 and an LOS worse than D through a majority of the study area. Therefore this alternative did not meet the primary purpose of relieving congestion within the I-15 corridor. Individual TSM elements were included as part of the remaining alternatives.
- **Alternative 3 – I-15 Widening and Reconstruction**  
This alternative was dropped because it did not include a transit component, and is therefore inconsistent with results of the referendum, which approved and funded commuter rail.
- **Alternative 5 – I-15 Widening and Reconstruction plus BRT**  
Alternative 5 was eliminated because its transit component (BRT) did not perform as well as Alternative 4's transit component (CRT). Alternative 5 would carry 2,275 fewer total transit riders and 4,652 fewer express transit riders than Alternative 4. Transit travel time for BRT riders would be 30-50% longer than CRT riders. In addition, Salt Lake County and Utah County voters demonstrated their desire for CRT by vote in November 2006, and CRT is proceeding.

#### 2.1.4.2 Alternatives Carried Forward

This section describes the two alternatives that were advanced from the multi-level screening analysis.

##### Alternative 1: No Build

- The definition of Alternative 1: No Build was revised to take into account both the advancement of CRT into UTA's local project development process and decisions made in the Mountain View Corridor EIS planning project regarding the location of the southern connection of the proposed Mountain View Corridor to I-15 in Utah County. As a result, Alternative 1 consists of the following elements:
- All highway and transit projects identified in the MAG Utah Valley 2030 Regional Transportation Plan (2005 adopted version);
- All highway and transit projects identified in the WFRC 2007-2030 Regional Transportation Plan;
- Proposed Mountain View Corridor as a freeway connecting to I-15 at Lehi 2100 North;
- Ongoing routine I-15 bridge and pavement preservation projects

##### Alternative 4: I-15 Widening and Reconstruction, plus CRT

Alternative 4 would provide for major widening and total reconstruction of the existing I-15 facility, including the following:

- Addition of general purpose lanes;
- Extension of express lanes to US-6 in Spanish Fork;
- Reconstruction of existing interchanges. Three options are being considered at American Fork Main Street.
- Construction of a new interchange (North Lehi).
- Four interchange and frontage road options in the Provo/Orem area.
- Reconstruction of bridges that cross over or under I-15
- Improvement to cross streets as needed to tie into the existing roadway. Cross street widths are in accordance with the current LRP
- Commuter rail from Provo to Salt Lake (FrontRunner)

#### 2.1.5 *Advancement of Commuter Rail*

The screening process advanced Alternative 4: I-15 Widening and Reconstruction, plus CRT for further study. In November 2006, voters approved funding for Commuter Rail in Utah and Salt Lake counties, and construction is anticipated to begin in spring 2008. Therefore, the commuter rail component of Alternative 4, now known as Provo to Salt Lake FrontRunner, has been studied by the Utah Transit Authority in October 2007. The Decision Document was signed in January 2008. In the remainder of this document, Alternative 4 only includes the highway components.

## 2.2 Detailed Description of Alternative 4

An overview of the existing I-15 lane configuration is illustrated on Figure 2-3, and an overview of the proposed lane configuration is illustrated on Figure 2-4. Typical section illustrations for the various lane configurations are provided on Figures 2-6, 2-7, and 2-8. Volume II of this EIS contains the conceptual engineering drawings of Alternative 4, shown on 11x17 aerial photography base maps. Cross-references to this volume are included in the following discussion where appropriate.

The I-15 Corridor was divided into four geographic sections to facilitate evaluation and presentation in this EIS. These sections are listed below and illustrated on Figures 2-3 and 2-4:

- South Utah County Section (South Payson Interchange to University Avenue Interchange)
- Central Utah County Section (University Avenue Interchange to Pleasant Grove Interchange)
- North Utah County Section (Pleasant Grove Interchange to County Line)
- South Salt Lake County Section (County Line to 12300 South Interchange)

Table 2-2 cross-references these sections to the relevant conceptual design sheets in Volume II of this EIS.

Table 2-2: Volume II Cross-References

Geographic Section	Volume II Sheet Numbers
South Utah County Section	Sheets 12 to 39
Central Utah County Section	Sheets 39 to 61
North Utah County Section	Sheets 61 to 86
South Salt Lake County Section	Sheets 86 to 96

I-15 improvements include additions or changes to the I-15 mainline, auxiliary lanes, interchanges, bridges, and other design features, including drainage elements and pedestrian and bicycle facilities. A summary description and an illustration of the proposed improvements in each section of the project are provided below.

### 2.2.1 *South Utah County Section (South Payson Interchange to University Avenue Interchange)*

A summary of the proposed improvements to this section is shown in Figure 2-9.

#### 2.2.1.1 Mainline Improvements

The existing lane configuration in this section is as follows:

- Two general purpose lanes in each direction between the South Payson Interchange and the US-6 Interchange
- Three general purpose lanes in each direction between the US-6 Interchange and the University Avenue Interchange
- One auxiliary lane southbound between the US-6 Interchange and the Spanish Fork Main Street Interchange
- One auxiliary lane in each direction between the North Springville Interchange and the University Avenue Interchange

Proposed mainline improvements in the South Utah County section are as follows:

- One general purpose lane in each direction would be added between the South Payson Interchange (Payson 800 South) and the Benjamin Interchange (SR-164), resulting in three general purpose lanes in each direction.
- Two general purpose lanes in each direction would be added between the Benjamin Interchange (SR-164) and the US-6 Interchange, resulting in four general purpose lanes in each direction between these two points.
- One general purpose lane and one express lane in each direction would be added between the US-6 Interchange and the University Avenue Interchange, resulting in four general purpose lanes and one express lane in each direction.

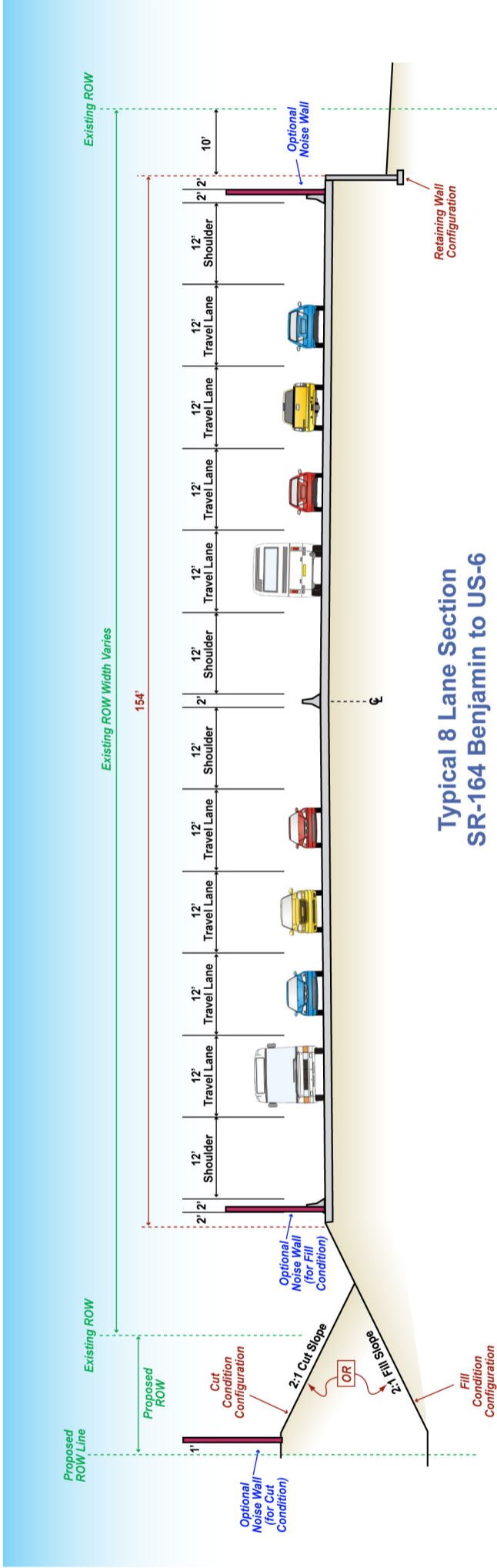
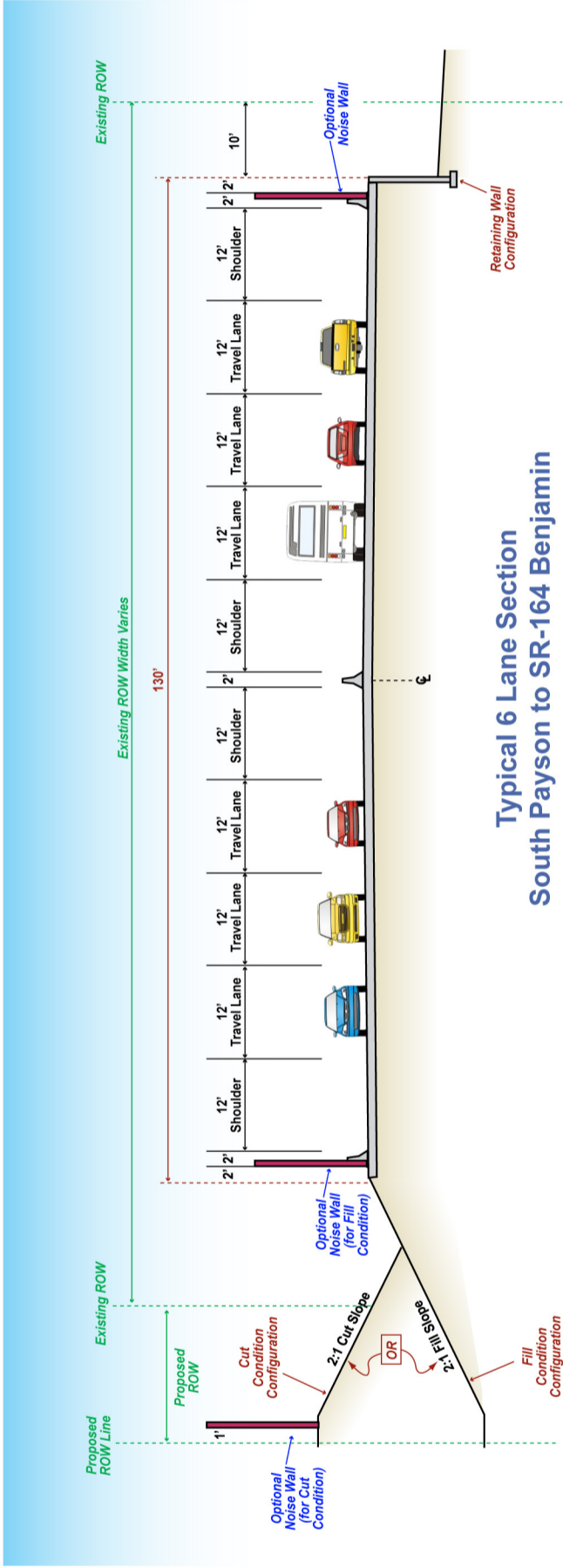


Figure 2-6  
Proposed I-15 Typical Cross Sections: 6 Lane and 8 Lane

NOTE: Each typical cross section contains three possible side treatment configurations: Cut condition (with 2:1 cut slope), Fill condition (with 2:1 fill slope), and Retaining Wall. Each side treatment configuration may or may not have a noise wall. Locations of noise walls are yet to be determined.

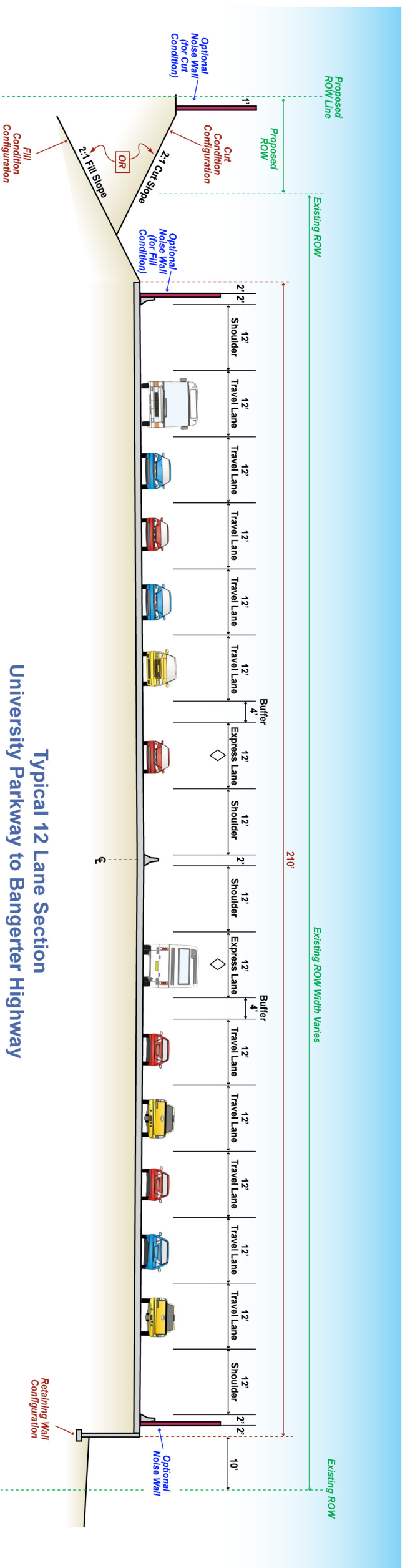
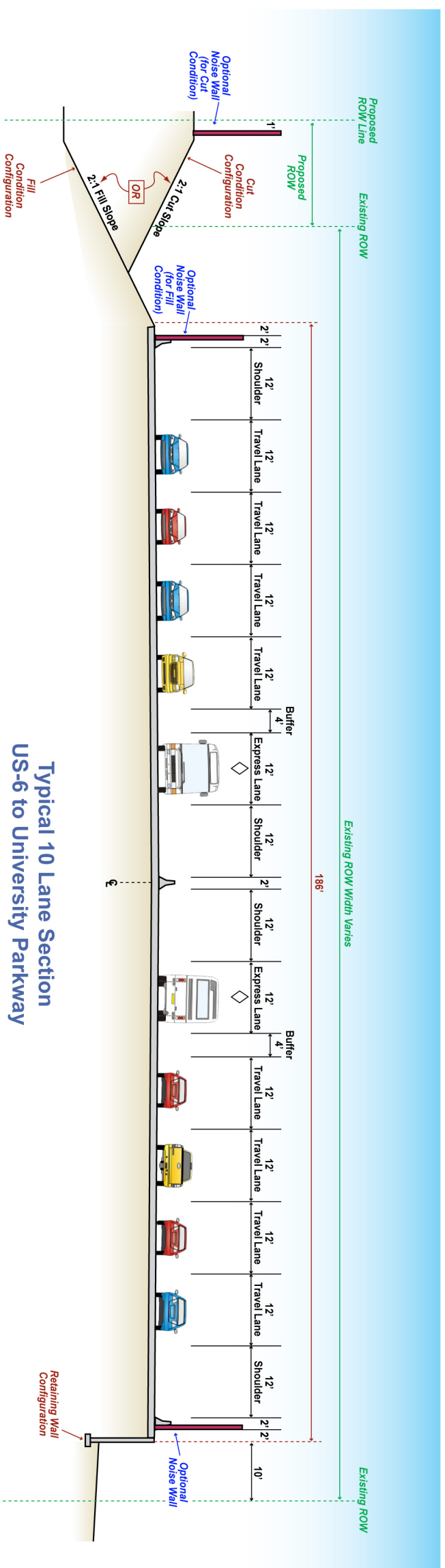


Figure 2-7  
Proposed I-15 Typical Cross Sections: 10 Lane and 12 Lane

**NOTE:** Each typical cross section contains three possible side treatment configurations: Cut condition (with 2:1 cut slope), Fill condition (with 2:1 fill slope), and Retaining Wall. Each side treatment configuration may or may not have a noise wall. Locations of noise walls are yet to be determined.



**NOTE:** Each typical cross section contains three possible side treatment configurations: Cut condition (with 2:1 fill slope), Fill condition (with 2:1 fill slope), and Retaining Wall. Each side treatment configuration may or may not have a noise wall. Locations of noise walls are yet to be determined.

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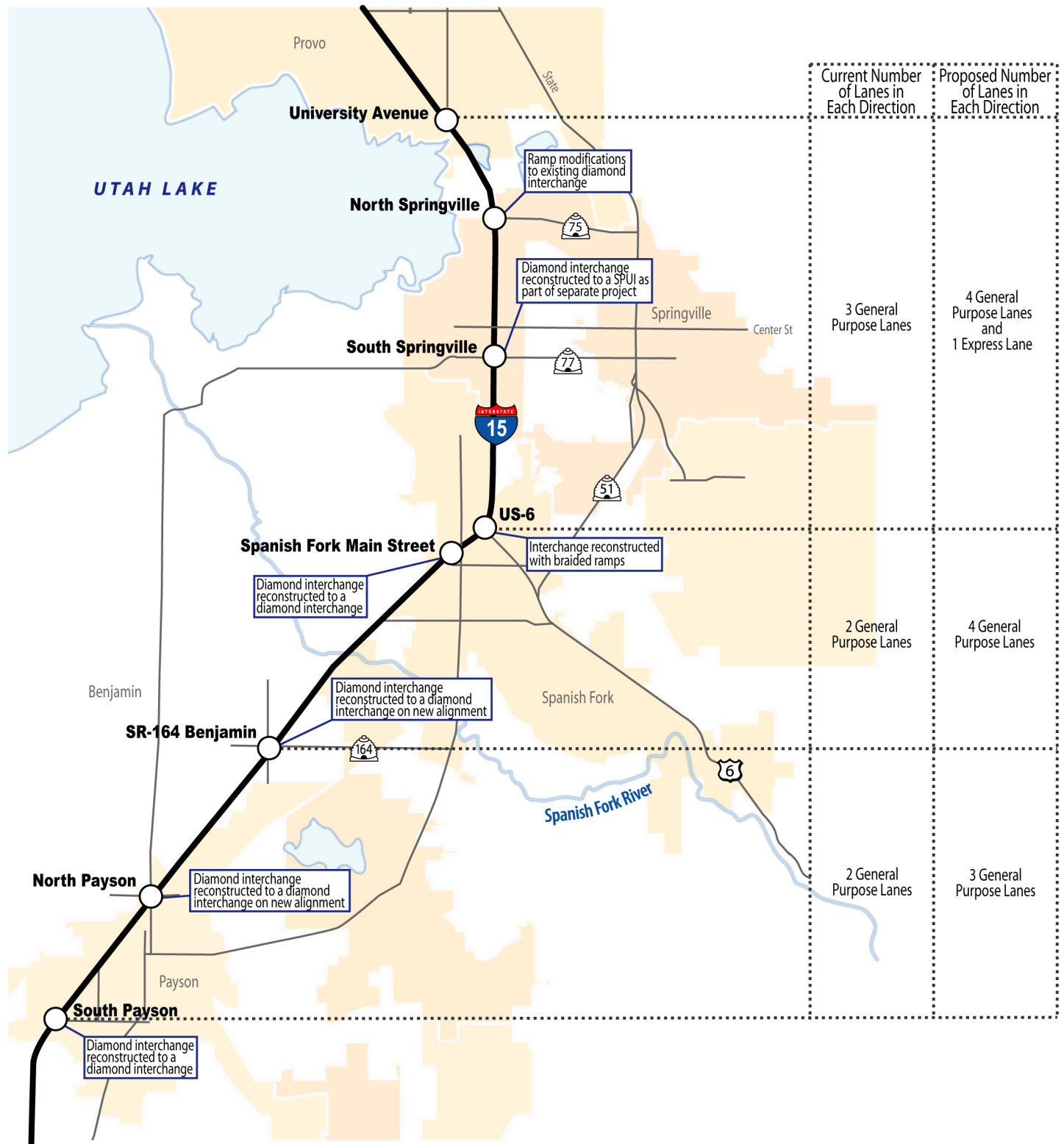


Figure 2-9  
Proposed Improvements: South Utah County Section



### 2.2.1.2 Auxiliary Lane Improvements

A new auxiliary lane would be constructed between the North Springville Interchange (Exit 261) and the South Springville Interchange (Exit 260).

### 2.2.1.3 Interchange Improvements

South Payson (Payson 800 South) – The existing diamond interchange would be reconstructed to a new diamond interchange. The existing interchange ramps, which are typically single-lane ramps, would be widened to two lanes. These additions would add capacity and provide for additional storage. Capacity would also be added to Payson 800 South by widening it to two lanes in each direction. This widening would extend through the interchange and for a short distance on both sides of the interchange prior to transitioning to the existing pavement.

North Payson (SR-115 / Main Street) – The existing diamond interchange would be reconstructed to a new diamond interchange. SR-115 / Main Street, which currently passes under I-15, would be widened to two lanes in each direction and would be realigned and cross over I-15 and the Union Pacific Railroad. The realignment of SR-115 / Main Street would reduce the skew of its crossing with I-15 and correct safety problems associated with the existing interchange ramps and the at-grade railroad crossing. It would also improve the distance between local business access and the interchange ramps. East of I-15, a new connection between SR-115 / Main Street and 900 North would be provided.

SR-164 Benjamin – The existing diamond interchange would be reconstructed to a new diamond interchange. SR-164, which currently crosses under I-15, would be widened to two lanes in each direction and would be realigned and cross over I-15 and the Union Pacific Railroad. The realignment of SR-164 would reduce the skew of its crossing with I-15, improve access to adjacent properties, and correct safety problems associated with the existing interchange ramps and the at-grade railroad crossing.

Spanish Fork (Main Street) – The existing diamond interchange would be reconstructed to a new diamond interchange. Main Street would be widened to two lanes northbound and three lanes southbound. The Main Street ramps would be grade-separated from the ramps of the US-6 interchange.

US-6 – The existing partial cloverleaf interchange would be reconstructed. The existing loop ramps would be replaced with direct connector ramps. Ramps would be grade-separated from the ramps of the Main Street interchange.

South Springville (400 South) – The existing diamond interchange would be reconfigured to a Single Point Urban Interchange (SPUI). A Categorical Exclusion is currently being prepared as a separate project.

North Springville (1400 North) – Ramp modifications would be made to the existing diamond interchange, which has been recently reconstructed. The only work necessary would be at the ramp gores to accommodate a widened I-15 cross-section.

### 2.2.1.4 Bridges / Structures Replacement or Reconstruction

In addition to the structures associated with the interchanges, 13 bridges would be reconstructed in this section:

- Utah Avenue (SR-147) – The I-15 bridge over Utah Avenue would be widened to accommodate the additional I-15 lanes. The opening for Utah Avenue would be designed to accommodate its future width as provided by the MAG Regional Transportation Plan.
- Payson 400 North – The I-15 bridge over Payson 400 North would be widened to accommodate the additional I-15 lanes. The opening for Payson 400 North would be designed to accommodate its future width as provided by the MAG Regional Transportation Plan.
- Box culvert crossing at Bamburger Road in north Payson
- Box culvert crossing at 2200 West in Spanish Fork

- Spanish Fork 7300 South – The existing bridge would be reconstructed over I-15. The bridge would be lengthened to accommodate the additional lanes on I-15 and also be widened to accommodate the future Spanish Fork 7300 South as provided by the Spanish Fork City Master Road Plan (SFCMRP).
- Spanish Fork River – The existing I-15 bridge over the Spanish Fork River would be reconstructed and widened to accommodate the additional lanes on I-15.
- Spanish Fork 6800 South – The existing I-15 bridge over 6800 South would be reconstructed and widened to accommodate the additional lanes on I-15 as well as the SFCMRP for 6800 South.
- UPRR Crossing at Center Street in Spanish Fork – The existing I-15 bridge over UPRR would be reconstructed and widened to accommodate the additional lanes on I-15.
- Spanish Fork 400 North – The existing Spanish Fork 400 North bridge over I-15 would be lengthened to accommodate the additional lanes on I-15 and would be widened to the width needed to accommodate improvements to 400 North as specified in the SFCMRP.
- Spanish Fork 300 West – The existing I-15 bridge over Spanish Fork 300 West would be widened to accommodate the additional lanes on I-15 as well as the SFCMRP width for 300 West.
- Union Pacific Railroad North of US-6 in Spanish Fork – The existing bridges over the Union Pacific Railroad would be reconstructed and widened at two locations to accommodate the additional lanes on I-15.
- Spanish Fork 2700 North – The existing bridge would be reconstructed over I-15. It would be lengthened to accommodate the additional lanes on I-15 and would be widened to accommodate improvements to Spanish Fork 2700 North as specified in the MAG Regional Transportation Plan.

## ***2.2.2 Central Utah County Section (University Avenue Interchange to Pleasant Grove Interchange)***

A summary of the proposed improvements to this section is shown on Figures 2-10 and 2-11.

### **2.2.2.1 Mainline Improvements**

The existing lane configuration in this section is as follows:

- Three general purpose lanes in each direction between the University Avenue Interchange and University Parkway Interchange
- Three general purpose lanes and one express lane in each direction between the University Parkway Interchange and the Pleasant Grove Interchange
- One auxiliary lane in each direction between each interchange from the Orem Center Street Interchange to the Orem 1600 North Interchange

Proposed mainline improvements in this section are as follows:

- One general purpose lane and one express lane in each direction would be added between the University Avenue Interchange and the University Parkway Interchange, resulting in four general purpose lanes and one express lane in each direction. The portion of the mainline between 820 North and 1140 North would be realigned through the existing “S” curves to meet current design standards.
- Two general purpose lanes in each direction would be added between the University Parkway Interchange and the Pleasant Grove Interchange, resulting in five general purpose lanes and one express lane in each direction.

### **2.2.2.2 Auxiliary Lane Improvements**

One auxiliary lane in each direction would be constructed between each interchange from the University Parkway Interchange to the Orem 1600 North Interchange. One southbound auxiliary lane would be constructed between the Provo Center Street Interchange and University Parkway Interchange as part of the Provo/Orem Options C and D.

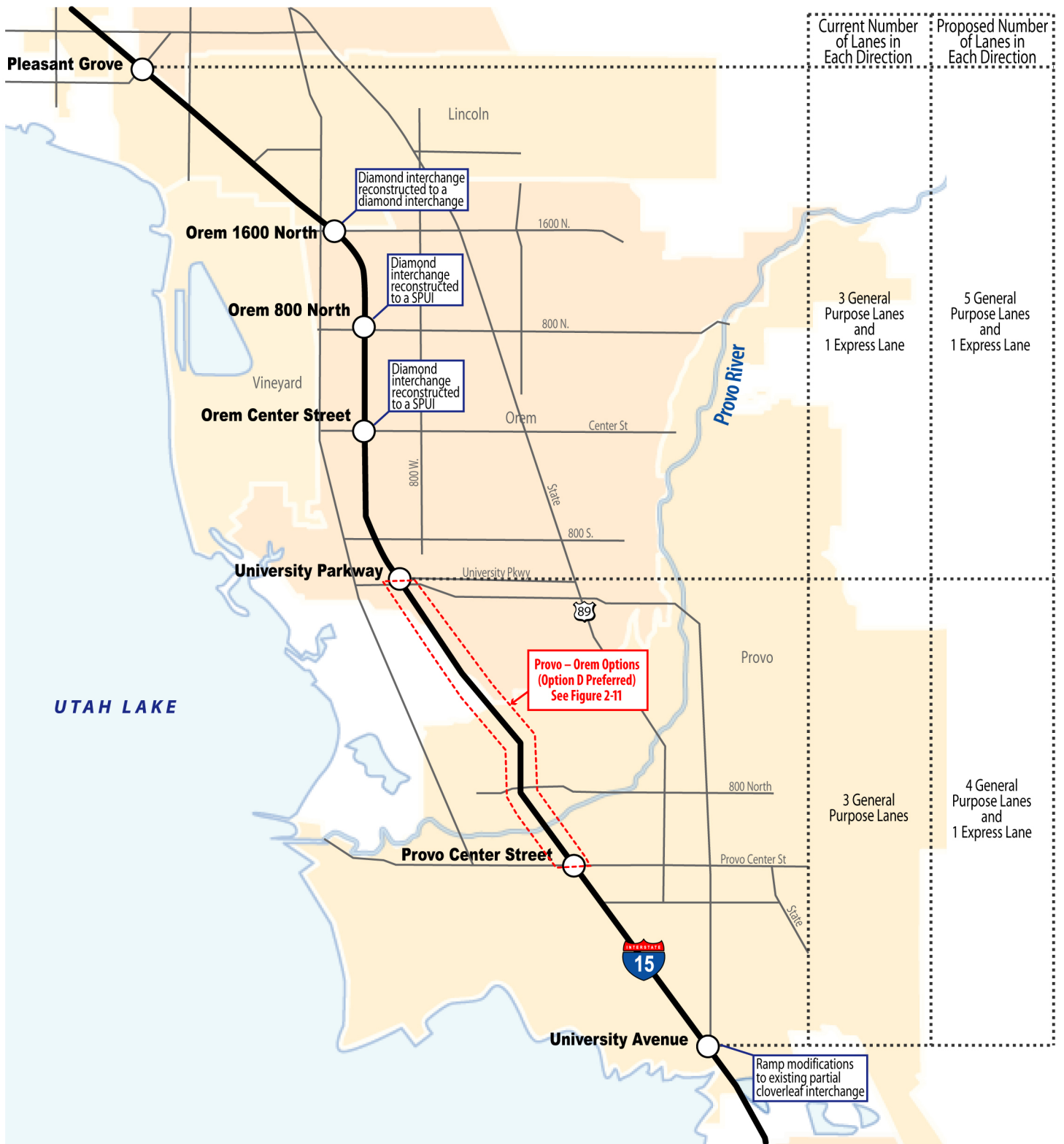
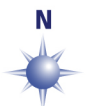
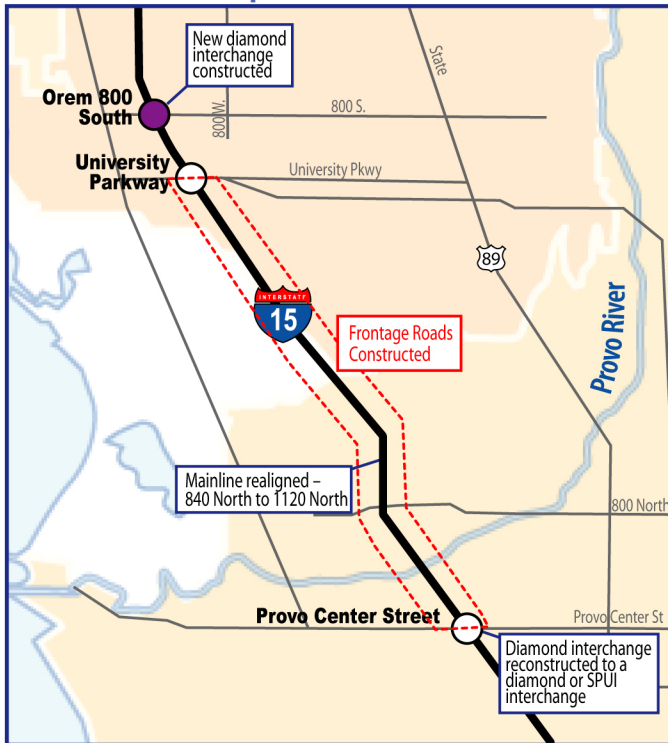


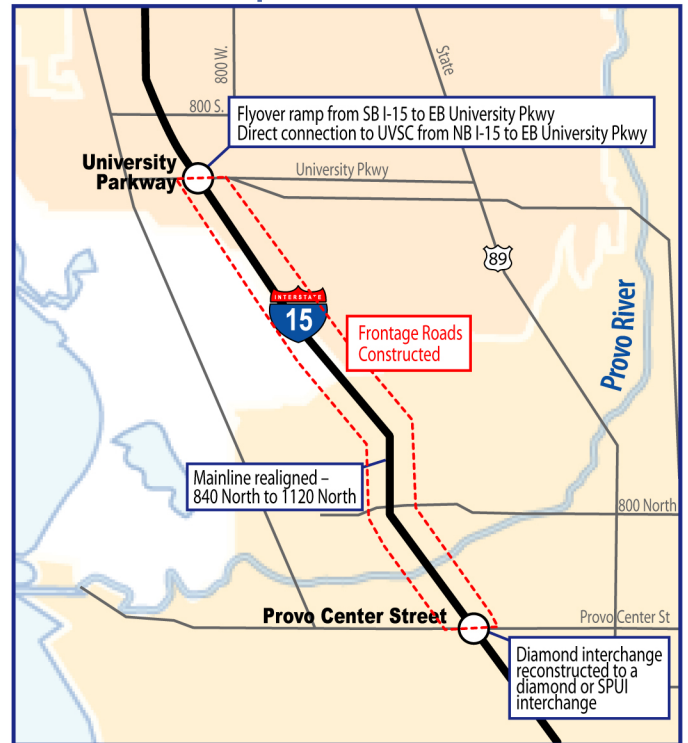
Figure 2-10  
Proposed Improvements: Central Utah County Section



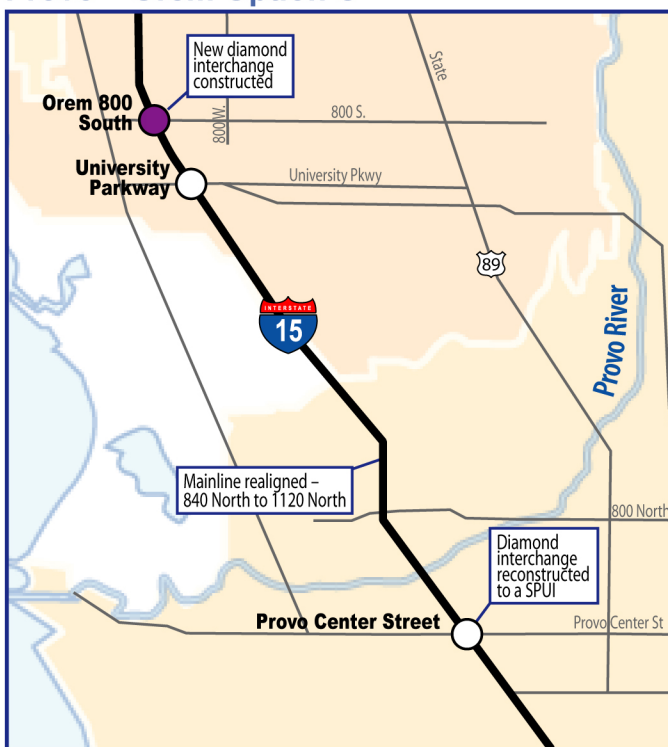
## Provo – Orem Option A



## Provo – Orem Option B



## Provo – Orem Option C



## Provo – Orem Option D (Preferred)

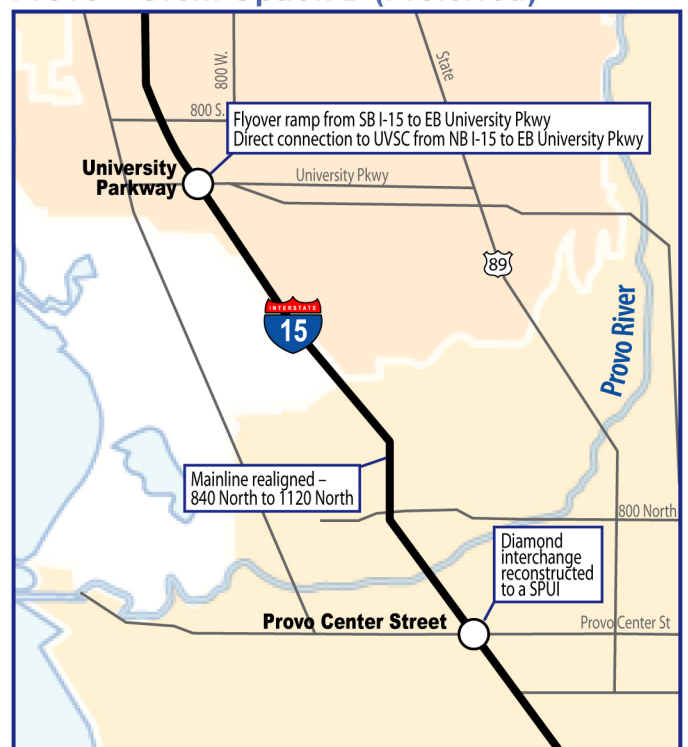


Figure 2-11

## Proposed Improvements: Provo – Orem Options

LEGEND:

- Proposed Interchange
- Existing Interchange



### 2.2.2.3 Interchanges and Frontage Roads

Within the Central Utah County section, various frontage road and interchange options are evaluated in this EIS for the following reasons:

- This section of the I-15 corridor includes the highest population density and the highest interchange component volumes in the corridor. This section also includes Utah Valley State College (UVSC), which is a high traffic generator. The main entrance to UVSC is located on University Parkway at Sandhill Road.
- University Parkway has the highest existing traffic volumes of any east-west arterial in Utah County, which contributes to the high interchange component volumes. Specifically, the volumes at the University Parkway/Sandhill Road intersection adversely impact the operations of the University Parkway interchange.
- The I-15 Corridor Management Plan (August 2001) and the Orem Southwest Area Transportation Study (November 2003) recommend the evaluation of frontage roads and interchanges in this area
- The current MAG Regional Transportation Plan includes frontage roads in this area
- The cities of Provo and Orem have passed resolutions supporting frontage roads in this area.

To address these issues and recommendations, four options were developed which include combinations of frontage roads and interchange configurations for the middle four miles of the Central Utah County section. Two of these options (A and B) include frontage roads and two options (C and D) do not. Two of these options (A and C) include a new Orem 800 South interchange and two options (B and D) do not.

The option areas extend from the Provo Center Street Interchange to the Orem Center Street Interchange. Since the option areas are not coterminous with the Central Utah County section (Figure 2-4), this chapter presents traffic analyses for the option area and common area facilities separately. The common areas extend from the University Avenue Interchange to the Provo Center Street Interchange in the south and from the Orem Center Street Interchange to the Pleasant Grove Interchange in the north.

### 2.2.2.4 Option Area Facilities

Provo/Orem Option A – A two-lane, one-way frontage road system would be constructed in both directions between the Provo Center Street and the University Parkway Interchanges (refer to Figure 2-8 for typical section). In addition to these interchanges, access to and from the frontage roads would be provided at Provo 820 North, Provo 1740 North, and Provo 2000 North/Orem 2000 South. A new diamond interchange would be constructed at Orem 800 South. Conceptual engineering for this option is shown in Sheets 39A to 53A in Volume II.

The existing Provo Center Street Interchange would be reconstructed to a diamond or SPUI interchange designed to accommodate the frontage roads. The existing viaduct over the railroad tracks at Provo Center Street would be removed and replaced with a new structure.

Provo/Orem Option B – A one-way frontage road system would be constructed in both directions between the Provo Center Street Interchange and the University Parkway Interchange (refer to Figure 2-8 for typical section.). Access to and from the frontage roads would be provided at Provo 820 North, Provo 1740 North, and Provo 2000 North/Orem 2000 South. A flyover ramp would be constructed from southbound I-15 to eastbound University Parkway. A direct connection to UVSC would be provided from the northbound I-15 exit at University Parkway. A new interchange at Orem 800 South would not be constructed. Conceptual engineering for this option is shown in Sheets 39B to 53B in Volume II.

The existing Provo Center Street Interchange would be reconstructed to a diamond or SPUI interchange designed to accommodate the frontage roads. The existing viaduct over the railroad tracks at Provo Center Street would be removed and replaced with a new structure.

Provo/Orem Option C – No frontage roads are provided with this option. The Provo Center Street Interchange would be reconstructed as a SPUI. The existing viaduct over the railroad tracks at Provo Center Street will be removed and

replaced with a new structure. A new diamond interchange would be constructed at Orem 800 South. Conceptual engineering for this option is shown in Sheets 39C to 53C in Volume II.

Provo/Orem Option D (Preferred) – In response to environmental concerns and traffic needs, Option D, below, has been refined since publication of the DEIS. Refinements include re-aligning Provo 820 North south, and a slight shift in the I-15 mainline through the Orem 800 South Area. No frontage roads are provided with this option. The Provo Center Street Interchange would be reconstructed as a SPUI. The existing viaduct over the railroad tracks at Provo Center Street would be removed and replaced with a new structure. A flyover ramp would be constructed from southbound I-15 to eastbound University Parkway. A direct connection to UVSC would be provided from the northbound I-15 exit at University Parkway. A new interchange at Orem 800 South would not be constructed. Conceptual engineering for this option is shown in Sheets 39D to 53D in Volume II.

#### 2.2.2.5 Common Area Facilities

University Avenue – Ramp modifications would be made to the existing partial cloverleaf interchange, which has been recently reconstructed. The ramps would be modified to accommodate the widened I-15. Modifications to slope paving will be required to accommodate a wider I-15 at the SB University Avenue to SB I-15 structure, as well as the 1860 South structure over I-15.

Orem Center Street – The existing diamond interchange would be reconstructed and reconfigured to a SPUI. The existing roadway is five lanes east of I-15 and three lanes west of I-15. Center Street will be widened at the interchange to five lanes on both sides of I-15. 1200 West would be realigned to the east to create an intersection with Center Street that does not conflict with the interchange ramps, thus improving the safety and capacity of the intersection.

Orem 800 North – The existing diamond interchange would be reconstructed and reconfigured to a SPUI. Orem 800 North would be widened to three lanes in each direction through the interchange. The Orem 1200 West frontage road was recently realigned to the east to create an improved intersection with Orem 800 North.

Orem 1600 North – The existing diamond interchange would be reconstructed to a new diamond interchange. Orem 1600 North would be widened to two lanes in each direction through the interchange.

#### 2.2.2.6 Bridge Replacements / Construction

The following 13 structures, not associated with interchanges, would be added, replaced or reconstructed:

- Provo 500 West – A new I-15 bridge to accommodate a future 500 West undercrossing.
- Provo 920 South – The existing I-15 bridge over Provo 920 South would be widened to accommodate the additional lanes on I-15.
- Provo 600 South – The existing I-15 bridge over Provo 600 South would be widened to accommodate the additional lanes on I-15.
- Provo River – The existing I-15 bridge over the Provo River would be widened to accommodate the additional lanes on I-15.
- Provo 820 North – 820 North would be re-aligned slightly south. The new I-15 bridge over 820 North would be wide enough to accommodate the additional lanes on I-15.
- UPRR and UTA at the S-Curves – The existing I-15 bridges over the UPRR and UTA tracks would be widened to accommodate the additional lanes on I-15.
- Provo 1740 North – Provo/Orem Options A and B would provide a new undercrossing at Provo 1740 North.
- Provo 2000 North / Orem 2000 South – The existing I-15 bridge over Provo 2000 North / Orem 2000 South would be widened to accommodate the additional lanes on I-15.
- Orem 400 South – The existing I-15 bridge over the Orem 400 South would be widened to accommodate the additional lanes on I-15.
- Orem 400 North – The existing I-15 bridge over the Orem 400 North would be widened to accommodate the additional lanes on I-15.

- Orem 1200 North – A new I-15 bridge to accommodate a future 1200 North undercrossing.
- Geneva Road – The existing I-15 bridge over Geneva Road would be widened to accommodate the additional lanes on I-15.
- Lindon 200 South – The Lindon 200 South bridge would be reconstructed over I-15. The bridge would be lengthened to accommodate the additional lanes on I-15 and would be widened to accommodate the provisions for 200 South in the regional transportation plan.

### ***2.2.3 North Utah County Section (Pleasant Grove Interchange to County Line)***

A summary of the proposed improvements to this section is shown in Figure 2-12.

#### **2.2.3.1 Mainline Improvements**

The existing lane configuration in this section is three general purpose lanes and one express lane in each direction between the Pleasant Grove Interchange and the County Line.

Proposed mainline improvements in this section include two additional general purpose lanes in each direction between the Pleasant Grove Interchange and the County Line, resulting in five general purpose lanes and one express lane in each direction.

#### **2.2.3.2 Auxiliary Lane Improvements**

- One auxiliary lane in each direction would be constructed between the Pleasant Grove Interchange and the American Fork 500 East Interchange.
- One auxiliary lane in each direction would be constructed between the American Fork Main Street Interchange and the Lehi Main Street Interchange.
- One auxiliary lane in each direction would be constructed between the Lehi 1200 West Interchange and Alpine Interchange ramps, and
- One auxiliary lane in each direction would be constructed between the Alpine Interchange and the new North Lehi Interchange ramps.

#### **2.2.3.3 Interchange Reconstruction / Replacement**

Six interchanges would be reconstructed in this section. Three interchange options are included at the American Fork Main Street Interchange. Option C at American Fork Main Street has been refined since the publication of the DEIS, to reduce environmental impacts. Refinements include alignment shifts, retaining walls, and the addition of a lane between I-15 and 300 East. One new interchange would be constructed south of the Utah County / Salt Lake County Line.

- Pleasant Grove Interchange – Ramp modifications would be made to the existing diamond interchange, which has been recently reconstructed. The ramps would be modified to tie in to the widened I-15. Pleasant Grove Boulevard would be widened to two lanes in each direction through the interchange.
- American Fork 500 East – The existing diamond interchange would be reconstructed to a new diamond interchange. American 500 East would be widened to two lanes in each direction through the interchange. The interchange ramps would be widened.
- American Fork Main Street Option A – The existing diamond interchange would be reconstructed to a diamond interchange. Main Street would cross over I-15 on the existing alignment, cross over the railroad at Mill Pond Road, and connect to the proposed Northern Utah County East-West Connections Project (Lehi 1000 South) at 300 East in Lehi. Conceptual engineering for this option is shown in Sheets 69A to 71A in Volume II.
- American Fork Main Street Option B – The existing diamond interchange would be reconstructed to a SPUI. Main Street would be realigned and cross over I-15 and the railroad, run south of the adjacent railroad along American Fork 200 South, and connect to the proposed Northern Utah County East-West Connections Project (Lehi 1000 South) at 300 East in Lehi. Conceptual engineering for this option is shown in Sheets 69B to 71B in Volume II.

- American Fork Main Street Option C (Preferred) – The existing diamond interchange would be reconstructed to a SPUI. Main Street would be realigned and cross over I-15, run north of the adjacent railroad, cross over the railroad at Mill Pond Road, and connect to the proposed Northern Utah County East-West Connections Project (Lehi 1000 South) at 300 East in Lehi. Conceptual engineering for this option is shown in Sheets 69C to 71C in Volume II.
- Lehi Main Street – The existing diamond interchange would be reconfigured to a SPUI.
- Lehi 1200 West – The existing diamond interchange with the southbound hook ramp would be reconstructed and reconfigured to a SPUI.
- Alpine (SR-92) – The existing diamond interchange would be reconstructed and reconfigured to a SPUI. SR-92 would be widened to two lanes westbound and three lanes eastbound through the interchange. The West Frontage Road would be realigned to create a safe and efficient intersection with SR-92.
- North Lehi Interchange – A new SPUI would be constructed approximately 0.80 miles south of the Utah County / Salt Lake County Line (Exit 285). Because I-15 access at this location has not previously been provided, travel patterns from adjacent land uses are expected to change to take advantage of this new interstate access. The proposed new interchange would be in a rapidly growing area that does not yet have a fully developed roadway network – particularly on the east side of the freeway where the majority of the people using the interchange would have their origin or destination.

#### 2.2.3.4 Bridge Reconstruction / Replacement

Twelve structures, in addition to those structures associated with interchanges, would be reconstructed or replaced in this section.

- Proctor Road – The Proctor Road bridge would be reconstructed over I-15. The bridge would be lengthened to accommodate the additional lanes on I-15 and would be widened to accommodate the provisions for Proctor Road in the regional transportation plan.
- American Fork 1100 South (Sam White Lane) – The 1100 South bridge would be reconstructed over I-15. The bridge would be lengthened to accommodate the additional lanes on I-15 and would be widened to accommodate the provisions for 1100 South in the regional transportation plan.
- American Fork 100 East – The existing I-15 bridge over 100 East would be reconstructed and widened to accommodate the additional I-15 lanes.
- American Fork River – The existing I-15 bridge over the American Fork River would be reconstructed and widened to accommodate the additional lanes on I-15.
- American Fork 200 South – The existing I-15 bridge over American Fork 200 South would be reconstructed and widened to accommodate the additional lanes on I-15.
- Lehi State Street – The I-15 bridge over Lehi State Street would be widened to accommodate the additional lanes on I-15.
- Lehi 500 East/600 East – The Lehi 500 East / 600 East bridge would be reconstructed over I-15 and widened to accommodate the width of Lehi 500 East / 600 East as specified in the MAG Regional Transportation Plan.
- Lehi 100 East – The existing I-15 bridge over Lehi 100 East would be reconstructed and widened to accommodate the additional lanes on I-15.
- Dry Creek – The existing I-15 bridge over Dry Creek would be reconstructed and widened to accommodate the additional lanes on I-15. It would also be lengthened to accommodate a proposed future pedestrian underpass.
- Lehi 300 West – The existing I-15 bridge over Lehi 300 West would be reconstructed and widened to accommodate the additional lanes on I-15.
- Railroad Street – The existing I-15 bridge over the Union Pacific Railroad line at Railroad Street would be reconstructed and widened to accommodate the additional lanes on I-15.

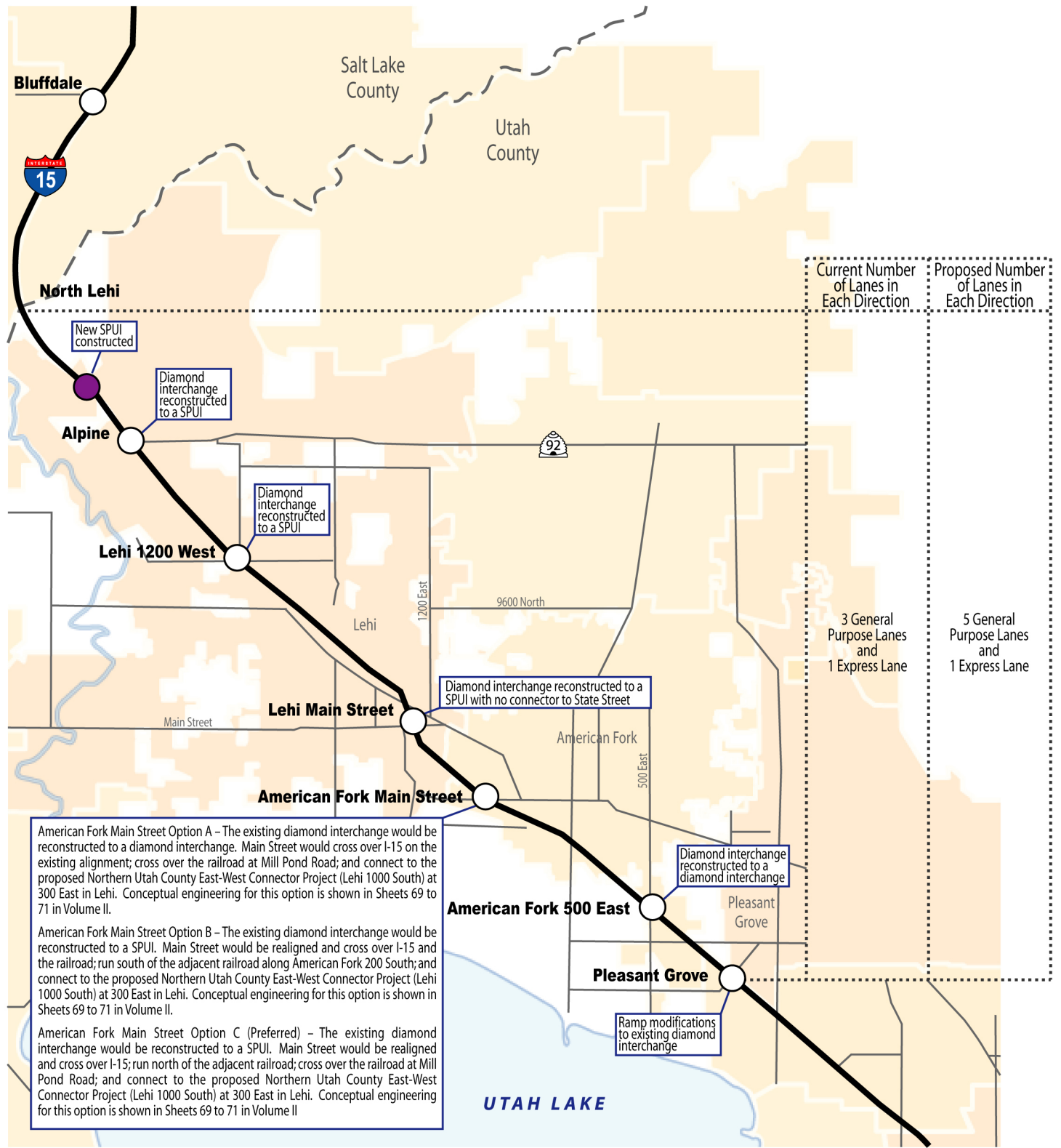


Figure 2-12  
Proposed Improvements: North Utah County Section

LEGEND:

- Proposed Interchange
- Existing Interchange



## **2.2.4 South Salt Lake County Section (County Line to 12300 South)**

A summary of the proposed improvements to this section is shown in Figure 2-13.

### **2.2.4.1 Mainline Improvements**

The existing lane configuration in this section is as follows:

- Three general purpose lanes and one express lane in each direction between the County Line and the Bangerter Highway Interchange
- Four general purpose lanes and one express lane in each direction between the Bangerter Highway Interchange and 12300 South Interchange
- One auxiliary lane between the Bluffdale Interchange and the Bangerter Highway Interchange in each direction
- One southbound climbing lane between the Bluffdale Interchange and the County Line

Proposed mainline improvements in this section are as follows:

- Two general purpose lanes in each direction would be added between the County Line and the Bangerter Highway Interchange, resulting in five general purpose lanes and one express lane in each direction. The southbound climbing lane would remain between the Bluffdale Interchange and the County Line. North of the Bluffdale interchange, the mainline curvature would be modified to meet current standards. One auxiliary lane would be added between Bangerter Highway and 12300 South.

### **2.2.4.2 Auxiliary Lane Improvements**

An auxiliary lane in each direction would be constructed between the Bangerter Highway Interchange and the 12300 South Interchange.

### **2.2.4.3 Interchanges**

Three interchanges would be reconstructed. The existing diamond interchange at Bluffdale would be reconstructed and reconfigured to a SPUI. Minuteman Drive would be realigned to the east to create a safe intersection with Highland Drive. Highland Drive would be widened to two lanes in each direction through the intersection. Ramp modifications would be made to the existing Bangerter Highway SPUI and to the existing 12300 South SPUI.

## **2.3 Interchange Options Eliminated**

As part of the alternatives development process, numerous interchange alternatives were developed for the interchanges on I-15. Interchange workshops were held with UDOT staff and the consultant team to review the various alternatives developed. Appendix B of this EIS contains a comparison of the interchange locations, types of interchanges considered, and reasons for their elimination from further consideration. Graphics illustrating the preferred interchange, as well as those eliminated, are contained in Appendix B.

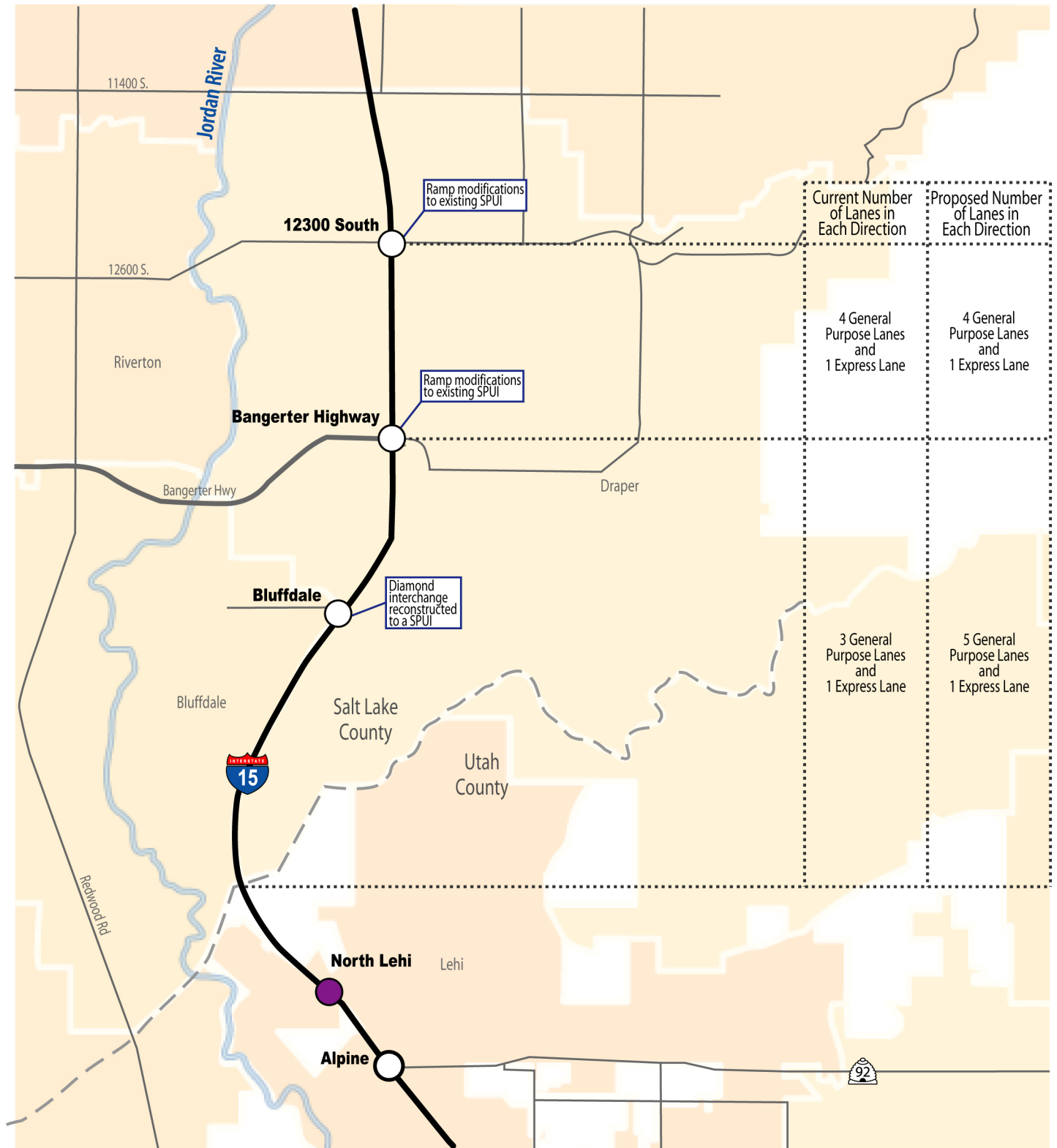


Figure 2-13

## Proposed Improvements: South Salt Lake County Section

LEGEND:

- Proposed Interchange
- Existing Interchange



## 2.4 Alternative 4 – Traffic Operations

The performance of Alternative 4 was evaluated from several perspectives: performance of I-15 mainline traffic operations, performance of the I-15 interchange components, and performance of the transportation systems network. Mainline traffic performance was estimated by using the volume-to-level of service look up table (as described in Chapter 1) from the Highway Capacity Manual (HCM). Intersection traffic performance was modeled using Synchro traffic analysis software. The frontage road area surface street delay was extracted from the WFRC/MAG travel demand model.

### 2.4.1 Comparison of South Utah County Section Traffic Operations

Figure 2-14 shows the existing and future mainline level-of-service in the South Utah County Section. In 2030 under Alternative 1, six out of seven mainline segments would operate at LOS E or F in either the northbound or southbound direction. Under Alternative 4, four mainline segments would operate at LOS E, while the other three would operate at LOS D or better. All southbound segments would operate at LOS D or E, and all northbound segments would operate at LOS C or D.

Figure 2-15 shows the existing and future levels-of-service for interchange components in South Utah County. In 2030 under Alternative 1, nine of fourteen interchange components would operate at LOS F. Under Alternative 4, twelve of fourteen interchange components would operate at LOS D or better.

### 2.4.2 Comparison of Central Utah County Section Traffic Operations

As discussed in Section 2.2.2.4, the following four options were analyzed for the Provo/Orem area within the Central Utah County Section:

- Option A – Frontage Road System with 800 South Interchange;
- Option B – Frontage Road System with Flyover at University Parkway;
- Option C – 800 South Interchange with no Frontage Road System; and
- Option D (Preferred) – Flyover at University Parkway with no Frontage Road System.

Analysis of traffic operations in the Central Utah County Section begins with the option area, and is followed by the common area.

#### 2.4.2.1 Option Area Traffic Operations

Figures 2-16 and 2-17 present the existing and future mainline and interchange component LOS for the option area. Table 2-3 compares LOS of Alternative 1 to each Central Utah County option in Alternative 4. Figure 2-17 also includes the performance of the Orem 800 South Interchange in Options A and C.

Table 2-3: LOS Comparison in Central Utah County Option Area

	Total # of Segments/ Components	Number of Segments or Components at LOS E or F				
		Alternative 1	Alternative 4 Option A	Alternative 4 Option B	Alternative 4 Option C	Alternative 4 Option D (Preferred)
Mainline	2	2	0	0	0	0
Interchange Component	9	6	1	1	1	2

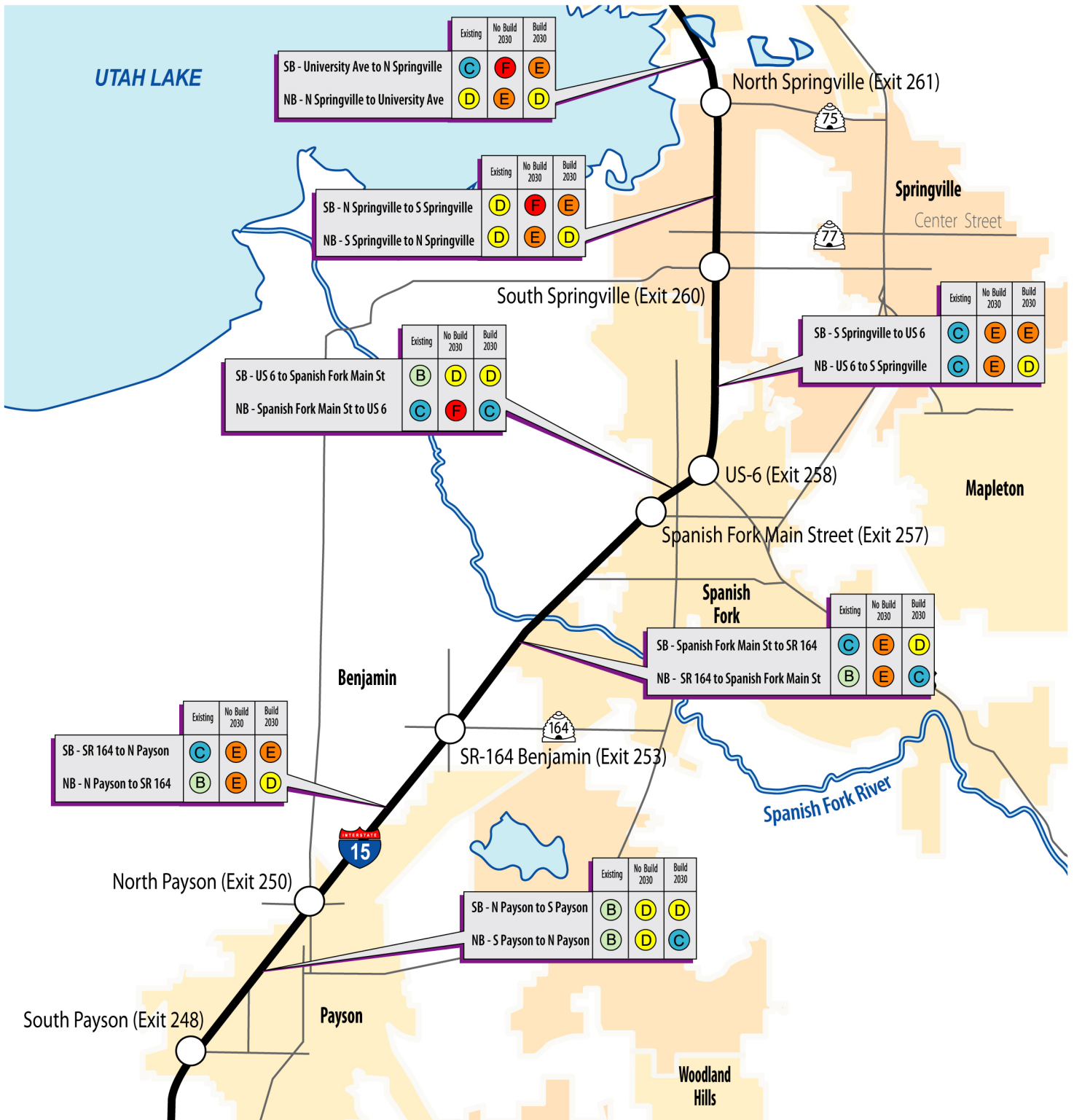


Figure 2-14

## Mainline Level of Service – Existing, 2030 No Build, and 2030 Build

### LEGEND:

Level of Service: A B C D E F

South Utah County  
Section



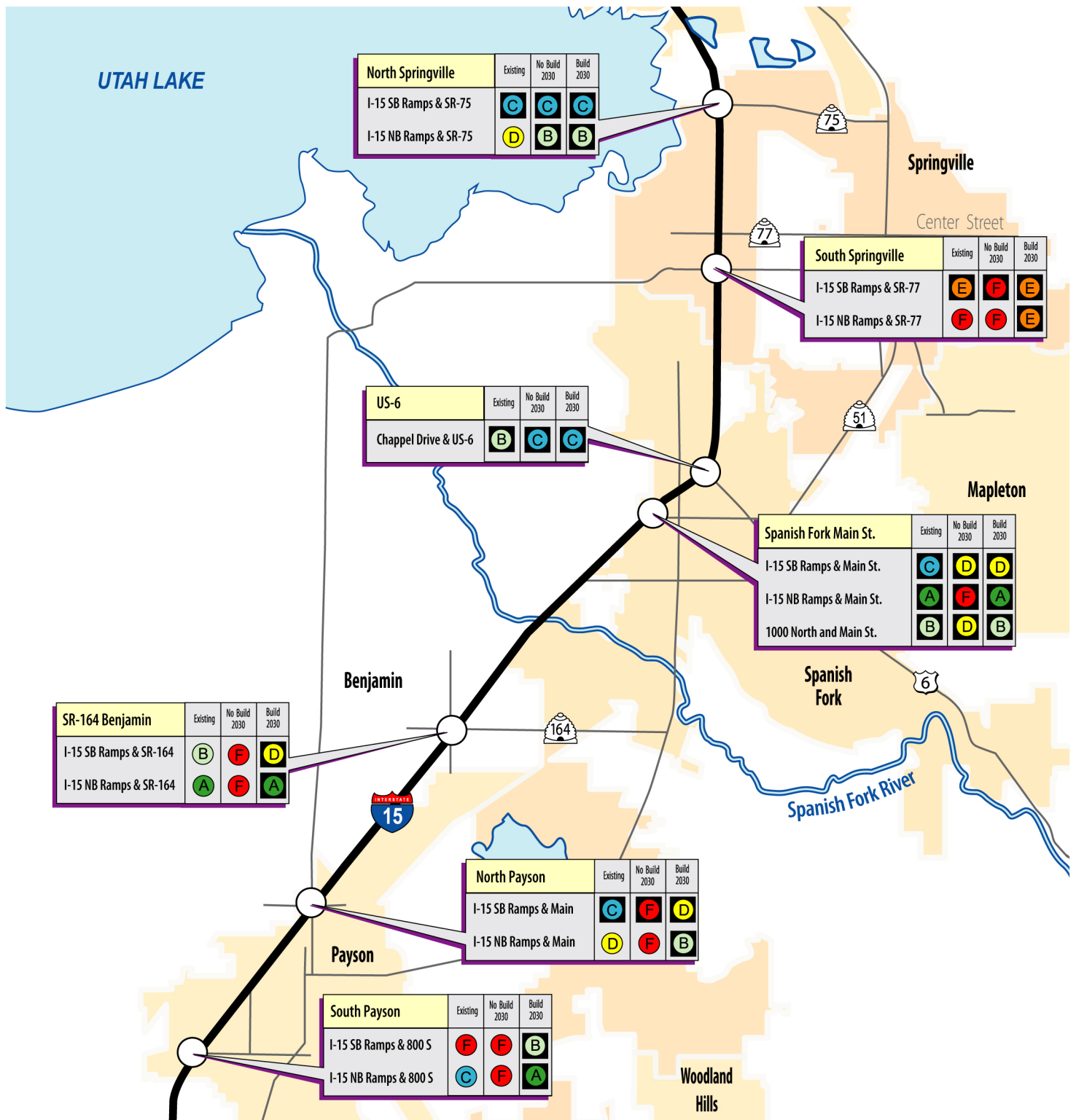


Figure 2-15

## Intersection Level of Service PM Peak – Existing, 2030 No Build, and 2030 Build

### LEGEND:

Level of Service at **Unsignalized** Intersections: A B C D E F

Level of Service at **Signalized** Intersections: A B C D E F

South Utah County  
Section





Figure 2-16  
Mainline Level of Service – Existing, 2030 No Build, and 2030 Build

LEGEND:

Level of Service: A B C D E F

Central Utah County  
Section



# I-15 CORRIDOR EIS | UTAH COUNTY - SALT LAKE COUNTY

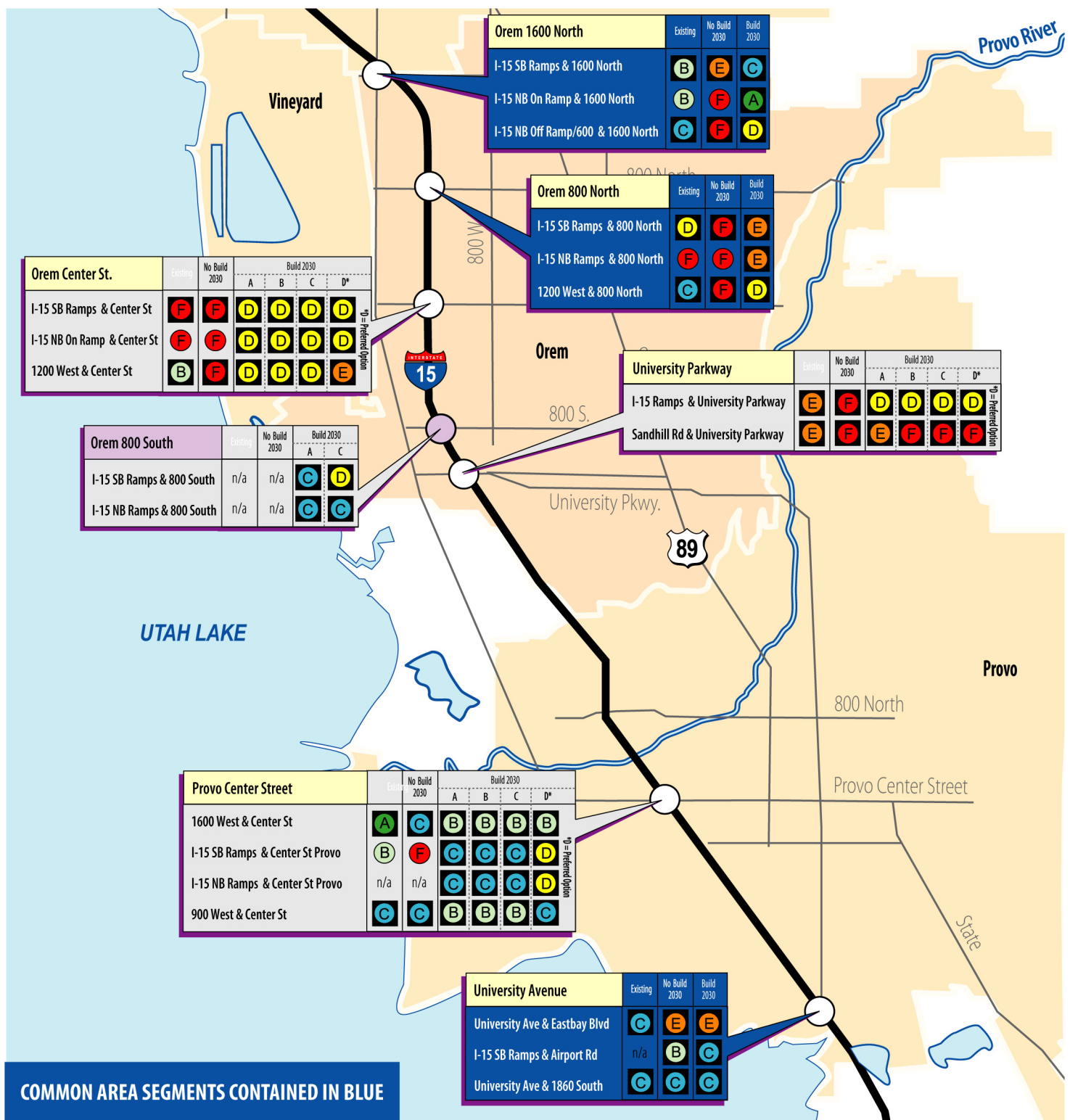


Figure 2-17

Intersection Level of Service PM Peak – Existing, 2030 No Build, and 2030 Build

## LEGEND:

Level of Service at **Unsignalized** Intersections: A B C D E F

Level of Service at **Signalized** Intersections: A B C D E F

Potential Interchange:

Central Utah County  
Section



The I-15 mainline segment from Provo Center Street to University Parkway improves from LOS E and F under Alternative 1 to LOS C under options A and B, and to LOS D under options C and D, in both directions. The northbound I-15 mainline segment from University Parkway to Orem Center Street improves to LOS C under options B, C, and D. LOS is D in Alternative 1 and Option A.

The WFRC/MAG travel model was used to analyze the overall 2030 daily surface street traffic delay within the area bounded by Orem Center Street to the north, State Street to the east, Provo Center Street to the south, and Geneva Road to the west. This analysis excluded I-15. The analysis shows that Option A performs best and has 30% less hours of surface street delay than Alternative 1 (Table 2-4). Option D (Preferred) does not include frontage roads or an I-15 interchange at Orem 800 South, and so does not offer any improvements in surface street delays.

Table 2-4: Option Area Surface Street Delay

	Delay (hrs)	% Difference vs. No Build
Alternative 1: No Build	3,920	N/A
Alternative 4: Option A	2,750	-30%
Alternative 4: Option B	3,410	-13%
Alternative 4: Option C	3,200	-19%
Alternative 4: Option D (Preferred)	3,930	0%

#### 2.4.2.2 Common Area Traffic Operations

Figure 2-16 shows the existing and future mainline level-of-service in Central Utah County common areas. In 2030 under Alternative 1, one of the four mainline segments would operate at LOS E in both the northbound and southbound directions. Under Alternative 4, all four mainline segments operate at LOS D or better.

Figure 2-17 shows the existing and future levels-of-service for interchange components in Central Utah County common areas. In 2030 under Alternative 1, seven of the nine interchange components would operate at LOS E or F. Under Alternative 4, six of the nine interchange components would operate at LOS D or better.

#### 2.4.3 Comparison of North Utah County Section Traffic Operations

As described in section 2.2.3.3, the North Utah County Section includes three interchange options at the American Fork Main Street Interchange. In addition, Alternative 4 includes a new North Lehi Interchange. Traffic analysis for the interchange components of the American Fork Main Street Interchange is presented separately from all common North Utah County Section options below. Traffic comparison for the new North Lehi interchange is presented separately in section 2.4.3.1.

Figure 2-18 shows the existing and future mainline level-of-service in North Utah County. In 2030 under Alternative 1, four of the five common area mainline segments would operate at LOS E or F in either the northbound or southbound direction. Under Alternative 4, all five common area mainline segments would operate at LOS D or better.

Figure 2-19 shows the existing and future levels-of-service for interchange components in North Utah County. In 2030 under Alternative 1, nine of thirteen common area interchange components would operate at LOS E or F. Under Alternative 4, all thirteen common area interchange components would operate at LOS D or better.

# I-15 CORRIDOR EIS | UTAH COUNTY - SALT LAKE COUNTY

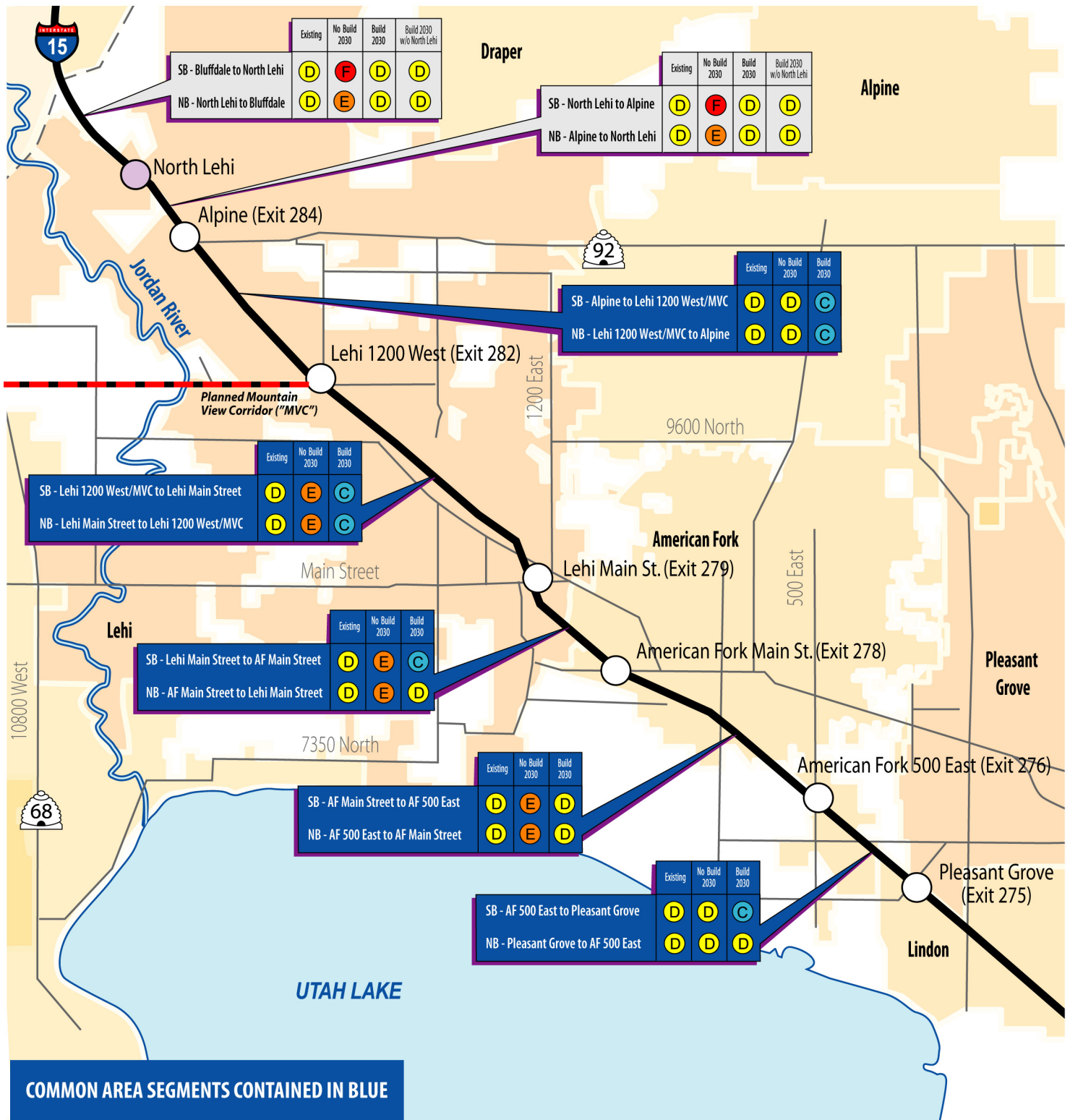


Figure 2-18

## Mainline Level of Service – Existing, 2030 No Build, and 2030 Build

### LEGEND:

Level of Service: A B C D E F

Potential Interchange:

North Utah County Section



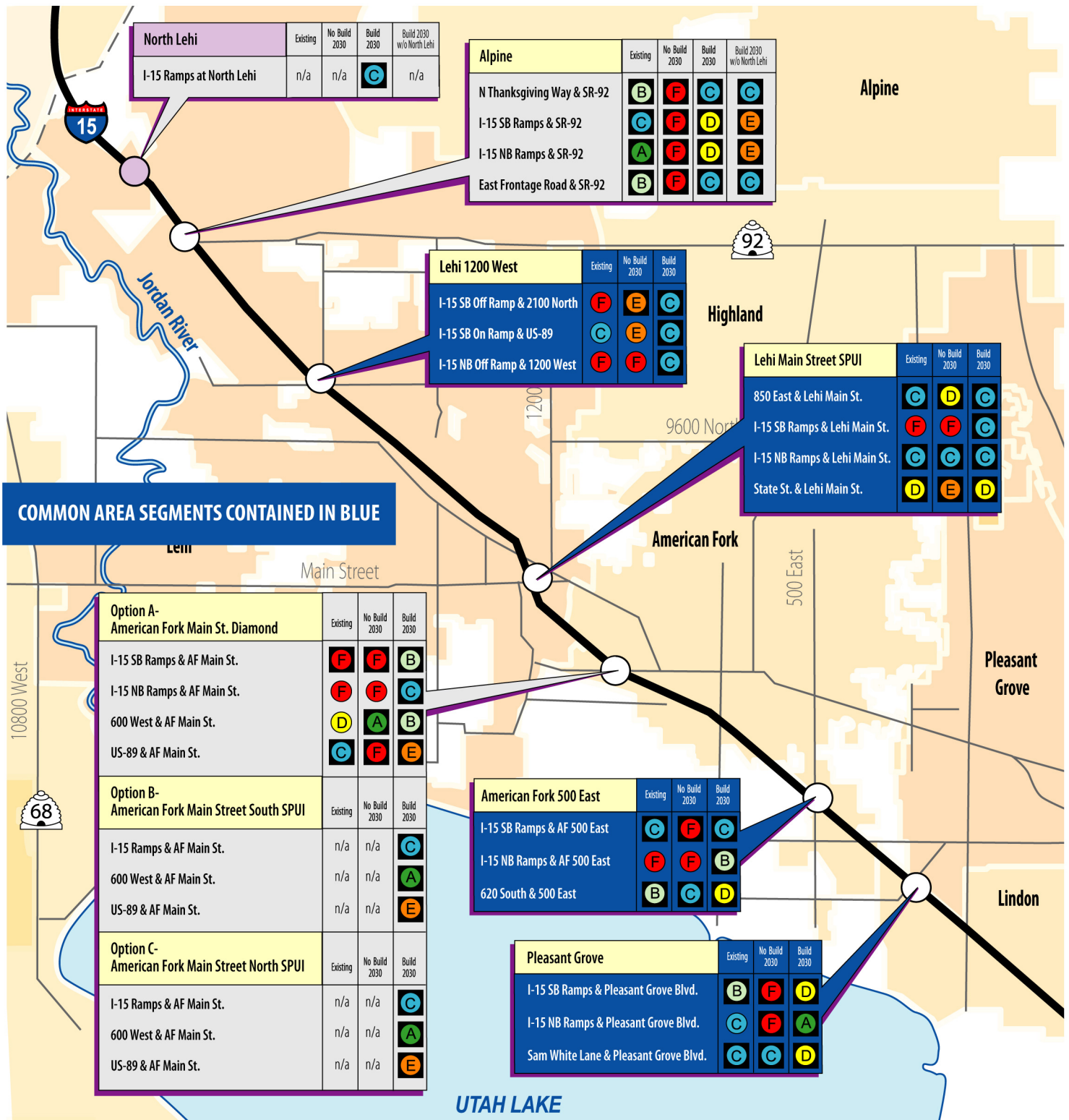


Figure 2-19  
Intersection Level of Service PM Peak – Existing, 2030 No Build, and 2030 Build

## LEGEND:

Level of Service at **Unsignalized** Intersections: A B C D E F  
Level of Service at **Signalized** Intersections: A B C D E F

Potential Interchange:

North Utah County  
Section



Figure 2-19 shows existing and future levels-of-service for interchange components at the American Fork Main Street Interchange. Under Alternative 1, three of four interchange components would operate at LOS E or F. Under Option A, three of four interchange components would operate at LOS D or better. Under options B and C two of three interchange components would operate at LOS D or better.

#### 2.4.3.1 Traffic Comparison for New North Lehi Interchange

Figure 2-18 shows the existing and future mainline level-of-service from Alpine to North Lehi and from North Lehi to Bluffdale. In 2030 under Alternative 1, both mainline segments would operate at LOS E or F in either the northbound or southbound direction. Under Alternative 4 *without* the North Lehi Interchange, both mainline segments would operate at LOS D or better. Similarly with the North Lehi Interchange, both mainline segments would also operate at LOS D or better.

Figure 2-19 shows the existing and future levels-of-service for the Alpine and North Lehi interchange components. Figure 2-21 shows the existing and future levels-of-service for the Bluffdale interchange components. In 2030 under Alternative 1, six of eight interchange components would operate at LOS E or F. Under Alternative 4 *without* the new North Lehi Interchange, six of the eight interchange components would operate at LOS D or better. With the new North Lehi Interchange, all nine interchange components would operate at LOS D or better.

Under Alternative 4 with the new North Lehi Interchange, traffic volumes on the existing frontage roads between the Alpine Interchange and the new North Lehi Interchange can be expected to increase by approximately 50% over Alternative 1 (No Build). In 2030, the west frontage road (two travel lanes) is projected to carry approximately 8,000 vehicles per day with the new interchange, and the east frontage road (four travel lanes) is estimated to have approximately 25,000 vehicles per day. These volumes would result in LOS C or better for both frontage roads. Traffic volumes on SR-92 near the I-15/SR-92 interchange would decrease by about 18%.

#### 2.4.4 Comparison of South Salt Lake County Section Traffic Operations

Figure 2-20 shows the existing and future mainline level-of-service in the South Salt Lake County Section. In 2030 under Alternative 1, both mainline segments would operate at LOS E or F in both directions. Under Alternative 4, one segment would operate at LOS F in both directions.

Figure 2-21 shows the existing and future levels-of-service for interchange components in South Salt Lake County. The interchange components associated with the Bluffdale Interchange were described above in Section 2.4.3.1. In 2030 under Alternative 1, none of the four interchange components would operate at LOS E or F. Under Alternative 4, all four interchange components would operate at LOS D or better.

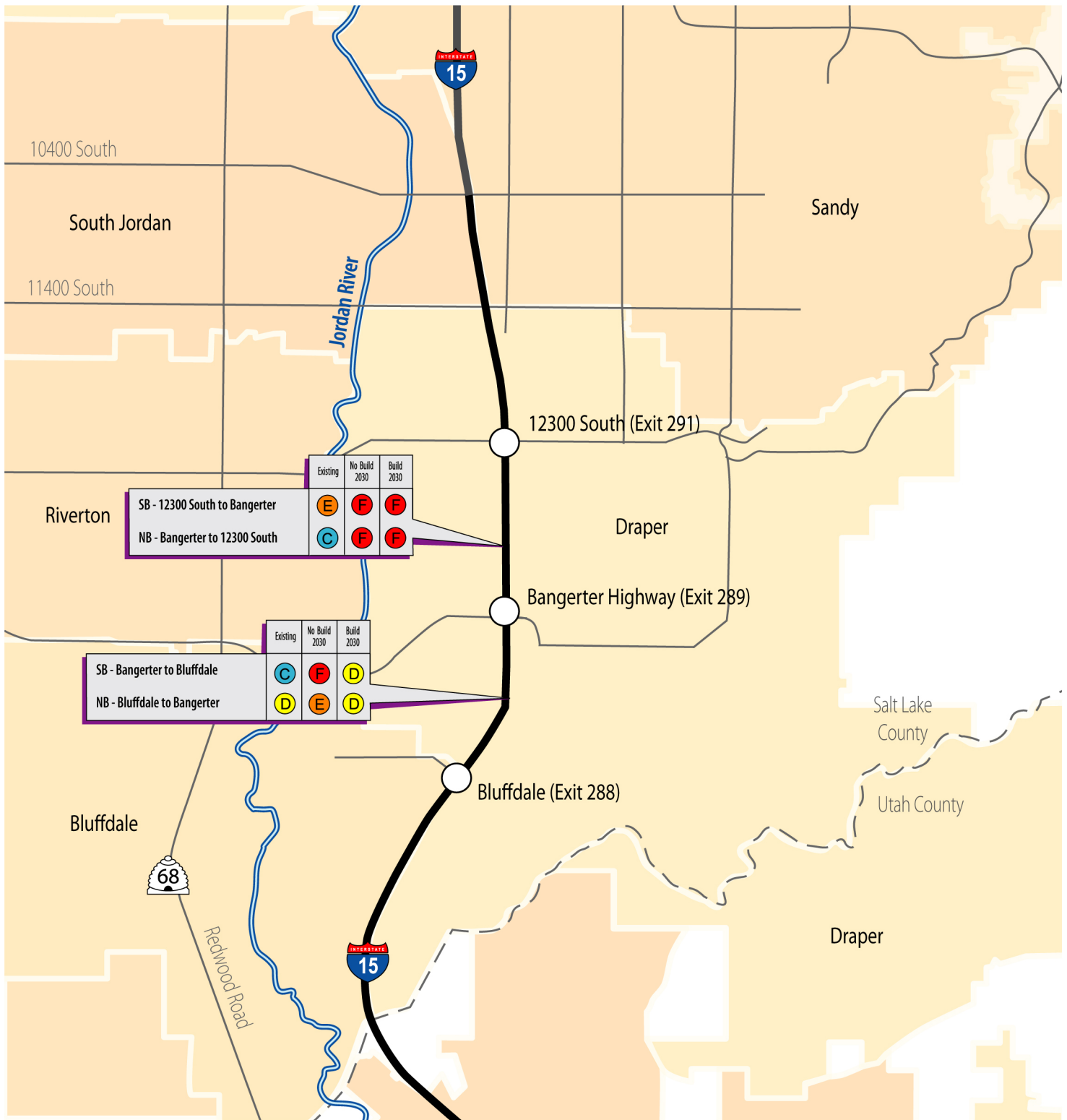


Figure 2-20

## Mainline Level of Service – Existing, 2030 No Build, and 2030 Build

### LEGEND:

Level of Service: A B C D E F

South Salt Lake County  
Section



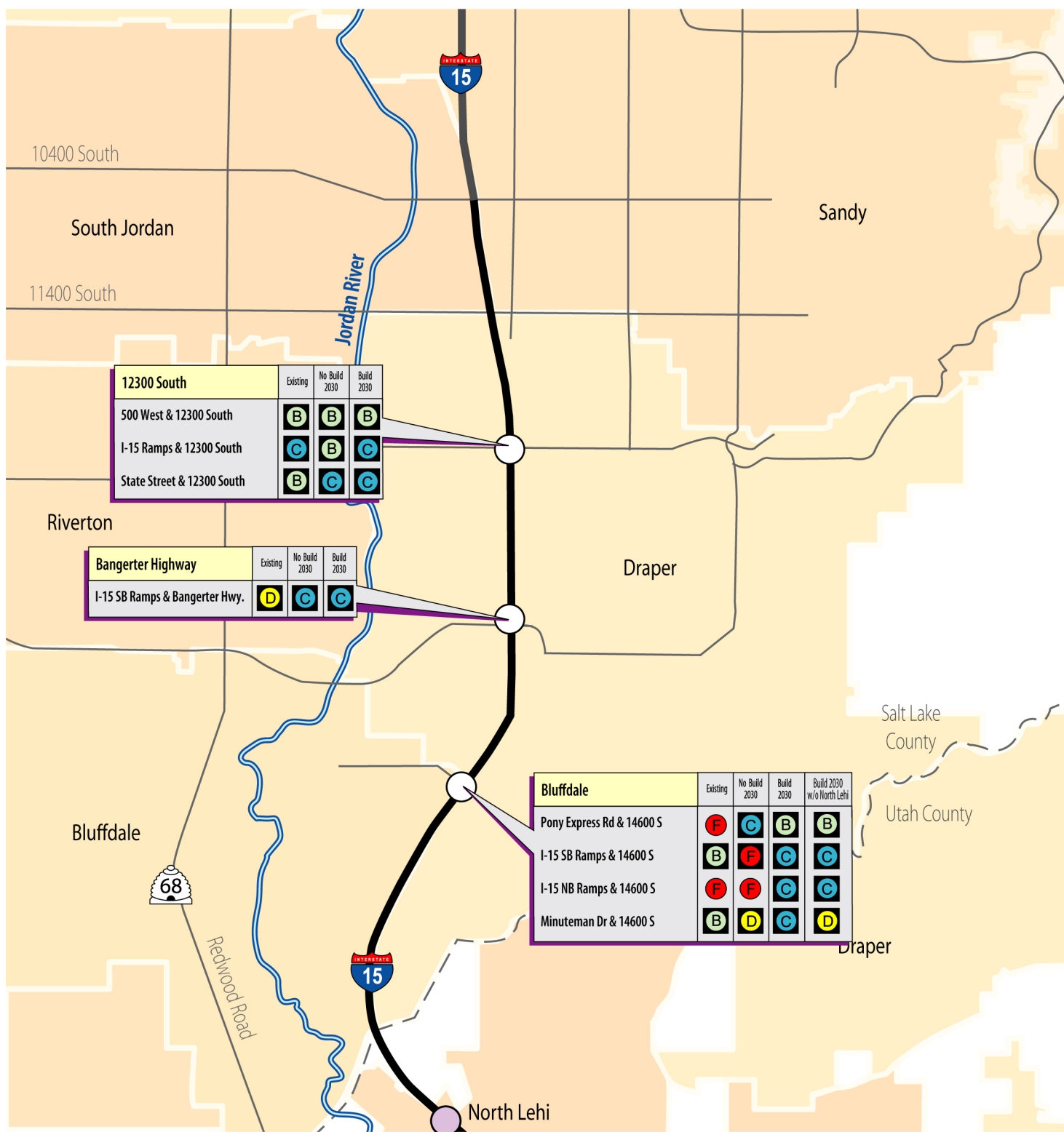


Figure 2-21

## Intersection Level of Service PM Peak – Existing, 2030 No Build, and 2030 Build

### LEGEND:

Level of Service at **Unsignalized** Intersections: A B C D E F

Level of Service at **Signalized** Intersections: A B C D E F

Potential Interchange:

South Salt Lake County  
Section



## 2.4.5 Summary Comparison of Alternatives and Options

Table 2-5 presents a summary of the traffic analysis and comparison described above.

Table 2-5: LOS Summary Comparison

Section		Mainline Sections		Intersection Components	
		Total	LOS E or F	Total	LOS E or F
South Utah County Section					
	Alternative 1	7	6	14	9
	Alternative 4 (Preferred)	7	4	14	2
Central Utah County Section					
Common Area	Alternative 1	4	4	9	6
	Alternative 4 (Preferred)	4	1	9	1
Option Area	Alternative 1	2	2	9	6
	Alt 4 Option A	2	0	9	1
	Alt 4 Option B	2	0	9	1
	Alt 4 Option C	2	0	9	1
	Alt 4 Option D (Preferred)	2	0	9	2
North Utah County Section					
Common Area	Alternative 1	5	4	13	9
	Alternative 4 (Preferred)	5	0	13	0
American Fork Interchange	Alternative 1	N/A	N/A	4	3
	Alt 4 Option A	N/A	N/A	4	1
	Alt 4 Option B	N/A	N/A	3	1
	Alt 4 Option C (Preferred)	N/A	N/A	3	1
North Lehi	Alternative 1	2	2	8	6
	Alt 4 w/o Interchange	2	0	8	2
	Alt 4 w/ Interchange	2	0	9	0
South Salt Lake County Section					
	Alternative 1	2	2	4	0
	Alternative 4 (Preferred)	2	2	4	0

## 2.5 Impacts on the Transportation System

The improvements to the I-15 corridor under Alternative 4 would impact the adjacent roadway system in Utah and Salt Lake counties. To assess these impacts, traffic volumes and level of service were analyzed for select north-south and east-west roadways. The volumes were calculated by applying the daily volume changes forecasted by the WFRC/MAG travel model to existing roadway volumes. The HCM Arterial Planning methodology was used to develop a lookup table of daily volumes to approximate roadway level-of-service.

In the Central Utah County section, which includes the frontage road options, the north-south roadways are Geneva Road, Orem 1200 West, Orem 400 West, Orem Main Street, State Street and University Avenue. The east-west roadways are Orem Center Street, Orem 200 South, Orem 400 South, Orem 800 South, University Parkway, Provo 1740 North, Provo 820 North and Provo Center. The results of this analysis are summarized in Tables 2-6 and 2-7.

For the other three sections, the north-south-roadways are State Street, Geneva Road, Alpine Highway (SR-74), Redwood Road, and the proposed Mountain View Corridor. No east-west roadways are included in the analysis for this section of the corridor. The results of this analysis are summarized in Table 2-8.

Table 2-6: Volume and LOS on North/South Roadways - Central Utah County Section

Location	Alternative 1 (No-Build)		Alternative 4 Option A		Alternative 4 Option B		Alternative 4 Option C		Alternative 4 Option D (Preferred)	
	vehicles/ day	LOS	vehicles/ day	LOS	vehicles/ day	LOS	vehicles/ day	LOS	vehicles/ day	LOS
Geneva Road										
Orem 1600 N to Orem Center St	27,000	C	20,000	C	21,000	C	21,000	C	22,000	C
Orem Center St to University Pkwy	46,000	C	34,000	C	40,000	C	35,000	C	42,000	C
University Pkwy to Provo Center St	17,000	D	15,000	C	15,000	C	18,000	E	18,000	E
Orem 1200 West										
Orem 1600 N to Orem Center St	14,000	E	12,000	D	13,000	D	12,000	D	13,000	D
Orem Center St to Orem 800 S	17,000	F	6,300	C	15,000	F	6,600	C	15,000	F
Orem 400 West										
Orem 800 N to Orem Center St	9,700	D	9,100	D	9,200	D	9,100	D	9,300	D
Orem Center St to Orem 800 S	8,900	D	7,500	C	8,300	D	7,600	C	8,400	D
Orem 800 S to University Parkway	11,000	D	10,000	D	11,000	D	9,900	D	11,000	D
Orem Main Street										
Orem 800 S to University Parkway	5,300	C	5,200	C	5,400	C	5,000	C	5,200	C
University Pkwy to Orem 2000 S	8,100	D	11,000	D	11,000	D	7,900	C	8,100	D
Orem 2000 S to Provo 1730 N	7,400	C	15,000	F	15,000	F	7,000	C	7,300	C
State Street										
Orem 1600 N to Orem Center St	66,000	F	60,000	E	61,000	E	61,000	E	62,000	F
Orem Center St to University Pkwy	69,000	F	65,000	F	65,000	F	66,000	F	66,000	F
University Pkwy to Provo Center St	59,000	E	56,000	D	56,000	D	59,000	E	59,000	E
University Avenue										
University Pkwy to Provo Center St	60,000	E	59,000	E	59,000	E	59,000	E	60,000	E
Provo Center St to I-15	46,000	C	48,000	C	47,000	C	48,000	C	49,000	C

Table 2-7: Volume and LOS on East/West Roadways - Central Utah County Section

Location	Alternative 1 (No-Build)		Alternative 4 Option A		Alternative 4 Option B		Alternative 4 Option C		Alternative 4 Option D (Preferred)	
	vehicles/ day	LOS	vehicles/ day	LOS	vehicles/ day	LOS	vehicles/ day	LOS	vehicles/ day	LOS
Orem Center Street										
Geneva Rd to 1200 West	31,000	C	24,000	C	28,000	C	22,000	C	27,000	C
1200 West to 400 West	39,000	E	42,000	F	39,000	E	42,000	F	39,000	E
400 West to State Street	32,000	C	37,000	D	34,000	C	38,000	D	34,000	C
Orem 400 South										
Geneva Rd to 800 West	13,000	D	5,800	C	13,000	D	6,000	C	13,000	D
800 West to State Street	9,700	D	7,600	C	8,700	D	7,700	C	8,900	D
Orem 800 South										
800 West to 400 West	9,700	B	20,000	C	9,300	B	21,000	C	9,700	B
400 West to Main Street	15,000	C	19,000	C	15,000	C	19,000	C	16,000	C
Main Street to State Street	21,000	C	23,000	C	21,000	C	24,000	C	21,000	C
University Parkway										
Geneva Rd to I-15	37,000	C	24,000	C	33,000	C	26,000	C	37,000	C
I-15 to 400 West	51,000	C	52,000	C	47,000	C	59,000	E	55,000	C
400 West to State St	50,000	C	54,000	C	56,000	D	57,000	D	59,000	E

Table 2-7: Volume and LOS on EastWest Roadways - Central Utah County Section - continued

Location	Alternative 1 (No-Build)		Alternative 4 Option A		Alternative 4 Option B		Alternative 4 Option C		Alternative 4 Option D (Preferred)	
	vehicles/ day	LOS	vehicles/ day	LOS	vehicles/ day	LOS	vehicles/ day	LOS	vehicles/ day	LOS
Orem 2000 South										
	5,700	C	6,900	C	6,800	C	5,800	C	5,900	C
	4,100	C	5,800	C	5,100	C	4,200	C	4,200	C
Geneva Rd to Sandhill Rd Sandhill Rd to Main St Main St to Columbia Lane	5,800	C	8,800	D	9,000	D	5,800	C	5,900	C
Provo 1740 North / Grandview Lane Sandhill Rd to Columbia Lane Columbia Lane to State Street	4,600	C	7,500	C	7,900	C	4,600	C	4,600	C
	8,200	D	7,600	C	7,700	C	8,300	D	8,500	D
Provo 820 North Geneva Rd to Independence Independence to 500 W 500 W to University Ave	17,000	C	23,000	C	22,000	C	17,000	C	17,000	C
	14,000	C	17,000	C	17,000	C	14,000	C	14,000	C
	27,000	C	25,000	C	25,000	C	24,000	C	24,000	C
Provo Center Street Geneva Rd to 900 West 900 West to 500 West 500 W to University Ave	21,000	C	27,000	C	27,000	C	31,000	C	31,000	C
	47,000	C	36,000	C	36,000	C	36,000	C	36,000	C
	20,000	C	21,000	C	21,000	C	19,000	C	20,000	C

Table 2-8: Volume and LOS – South Utah, North Utah and South Salt Lake County Sections

Roadway Segment	Alternative 1 (No Build)		Alternative 4 (Preferred)	
	Daily Volumes (vehicles per day)	LOS	Daily Volumes (vehicles per day) (change relative to Alternative 1)	LOS
State Street SR 77 to Provo 1860 South US 6 to SR 77	23,000 19,000	C E	22,000 (-4%) 18,000 (-6%)	C E
State Street Orem 1600 North to SR 74	48,000	C	42,000 (-13%)	C
Geneva Road Orem 1600 North to State Street	23,000	C	20,000 (-13%)	C
SR 74 State Street to SR 92	26,000	C	26,000 (0%)	C
Redwood Road SR 73 to County Line	10,000	B	8,000 (-21%)	B
Proposed Mountain View Corridor SR 73 to County Line	78,000	C	75,000 (-4%)	C
Redwood Road County Line to Bangerter Highway	20,000	C	15,000 (-25%)	C
Proposed Mountain View Corridor County Line to 13400 South	78,000	C	68,000 (-13%)	C

### 2.5.1 Summary of Transportation System Impacts

Several of the north/south roads would have substantial changes in traffic volumes and level-of-service between Alternative 1 and Alternative 4. These are Geneva Road, Orem 1200 West, Orem Main Street and State Street. For each road, traffic volumes are generated from the most recent MAG model (6.0). However, individual studies of particular corridors may need to modify the model to better suit local conditions. For that reason, volumes may differ between studies of differing scales. Those studies should be consulted for their own traffic volumes.

**Geneva Road:** Between Provo Center Street and University Parkway, volumes under Options A and B would be 15,000 vehicles per day. Under Options C and D (Preferred), the volume would be 18,000 vehicles per day and Geneva Road would operate at LOS E.

**Orem 1200 West:** Between Orem 800 South and Orem Center Street, 1200 West would see about a 60% decrease in traffic volume under Options A and C (with the Orem 800 South Interchange) and an improved LOS from F to C. Options B and D (Preferred) would reduce traffic volume by 12%; however, the LOS would remain at F.

**Orem Main Street:** Between Provo 1740 North and Orem 2000 South, volumes would more than double on Orem Main Street under Options A and B. The LOS would decrease from LOS C to LOS F. Between University Parkway and Orem 2000 South, volumes would increase by 36%, although the LOS would remain unchanged at D. The increase in volumes on Main Street is attributable to increased use of Orem Main Street to access I-15.

**State Street:** Traffic volumes on State Street between Provo Center Street and University Parkway would decrease by 5% under Options A and B, which would reduce the LOS from E to D. The volume and LOS would remain unchanged for the other options. Between Orem Center Street and Orem 1600 North, State Street volumes would decrease by 8% for Options B and C and by 9% for Option A. Each of these three options would reduce the LOS from F to E. Volumes would decrease by 6% for Option D (Preferred), but the LOS would remain at F.

The remaining north/south roadways would see minor changes in traffic volumes that would not improve or degrade the level-of-service relative to Alternative 1.

Several east/west roads would also see substantial changes in 2030 daily traffic volumes and/or LOS as a result of Alternative 4. These include Orem Center Street, Orem 800 South, University Parkway, and Orem 2000 South. The other east/west roadways would see minor changes in traffic volumes that would not improve or degrade LOS, as they relate to Alternative 1.

**Orem Center Street:** Between 1200 West and 400 West, Options A and C will increase traffic volumes by 8% and cause the LOS to drop from E to F. Options B and D (Preferred) will leave the volumes and LOS unchanged.

**Orem 800 South:** Between 800 West and 400 West, volumes would increase by 106% (Option A) or 116% (Option C); and, the LOS would decrease from B to C. Under Options B and D (Preferred), 800 South LOS would remain largely unchanged. Between 400 West and Orem Main Street, volumes would also increase by 27% under Options A and D (Preferred). However, the LOS would be C regardless of option.

**University Parkway:** Between 400 West and State Street, University Parkway volumes would increase by 18% and would operate at LOS E in Option D (Preferred). Option A would result in an 8% increase in traffic volumes with no change in LOS. Options B and C increase the volumes by 12% and 14%, respectively, which results in the LOS changing to D.

**Orem 2000 South:** Between Sandhill Road and Main Street, traffic volumes on 2000 South would increase by 41% (Option A) or 24% (Option B). Between Main Street and Columbia Lane traffic volumes would increase by 52% (Option A) or 55% (Option B). The LOS would be C for all segments and all options, except from Main Street to Columbia Lane, which would be LOS D under Options A and B.

**Provo 1740 North / Grandview Lane:** Between Sandhill Road and Columbia Lane, traffic volumes would increase by 63% (Option A) or 72% (Option B). The LOS would be C for all options. Between Columbia Lane and State Street, traffic volumes would experience a minor decrease and improve LOS from D to C, under Options A and B. Under Options C and D, the same segment would experience a minor increase in traffic volumes, with no change in LOS.

## 2.6 Joint Lead Agencies' Preferred Alternative

The Joint Lead Agencies have considered the traffic performance of Alternative 1 and Alternative 4, including all of the options through the Provo and Orem area, and the interchange options at American Fork Main Street. Based on those criteria, and in consideration of the environmental impacts documented in Chapters 3 and 4, the Joint Lead Agencies have identified Alternative 4, with Option C at American Fork Main Street (North SPUI), and Option D in the Provo/Orem area (a fly-over at University Parkway and round-about, with no frontage roads nor 800 South Interchange), as their Preferred Alternative. In summary, this alternative includes the following:

- Total reconstruction of I-15, including addition of general-purpose lanes to I-15;
- Extension of express lanes to US-6 in Spanish Fork;
- Reconstruction of existing interchanges;
- Construction of Option C at the American Fork Main Street Interchange;
- Construction of Option D in the Provo/Orem area;
- Construction of a new interchange at North Lehi;
- Improvements to bridges that cross the roadway;
- Improvements to connecting arterial streets;
- Construction of structures to accommodate new undercrossings at Provo 500 West and Orem 1200 North.

The Preferred Alternative has been selected after careful consideration of traffic performance, environmental impacts (Chapter 3) and all public comments (Appendix D). After comments regarding impacts to wetlands and other resources, elements of the Preferred Alternative have been refined. Refinements to Provo/Orem Option D include the re-alignment of Provo 820 North slightly south, and a slight shift in the I-15 mainline in the Orem 800 South area. Refinements to Option C in American Fork include alignment shifts, new retaining walls, and an additional lane on Main Street between I-15 and 300 East. Figure 2-22 illustrates the Preferred Alternative's level-of-service, relative to year 2005 conditions and Alternative 1 (No Build) conditions.

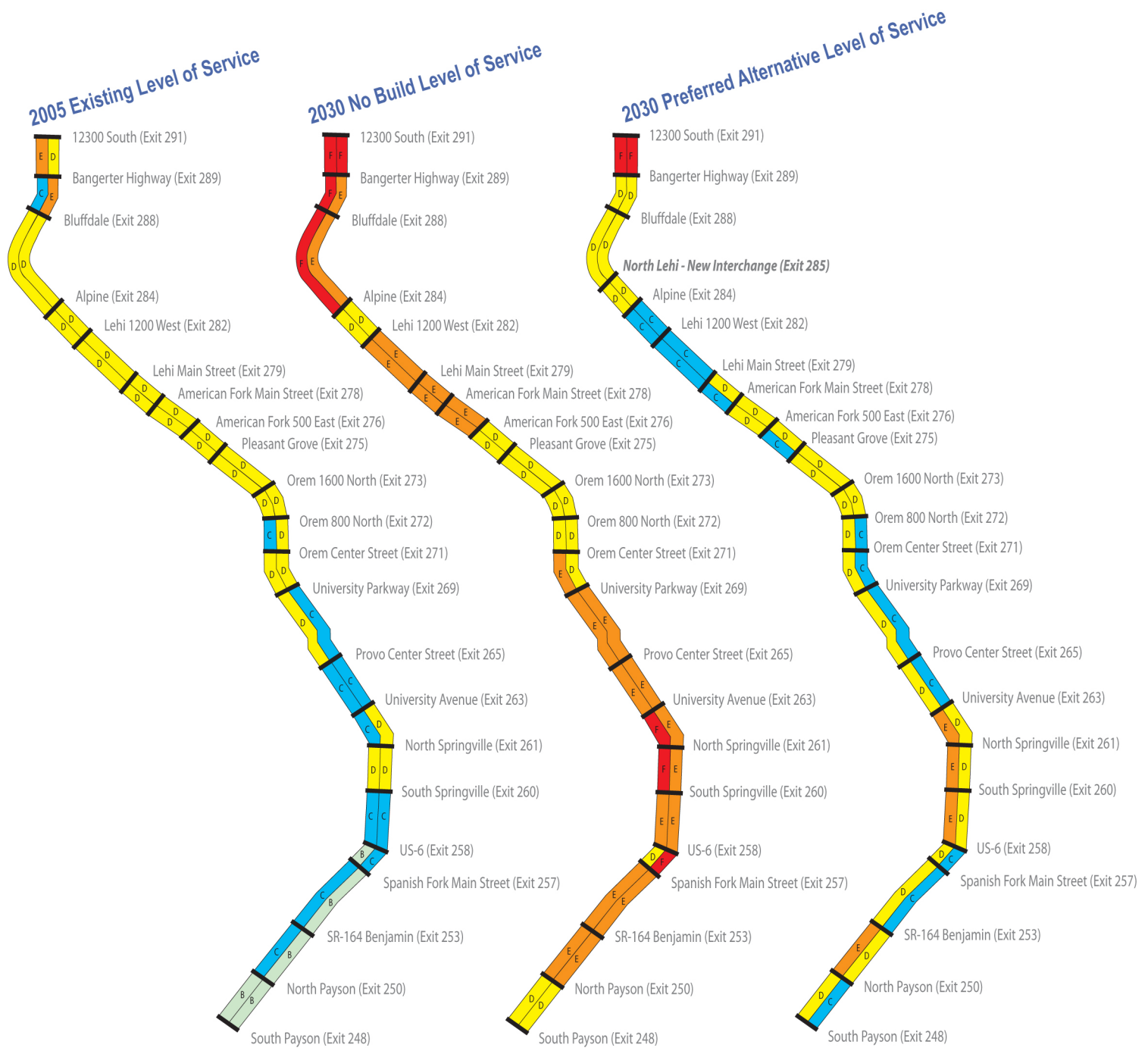


Figure 2-22  
Mainline I-15: 2005, 2030 No Build, and 2030 Preferred Alternative Level of Service